Mauufacturers Meet Thursday to Draft Industry Code

(Concluded from Page 1, Column 5)

bers the greatest benefits under the law.

"We have cooperated closely with the board of governors of the National Electrical Manufacturers Association in the formulation of a tentative code for that organization. Members of the board of governors of Nema have had a number of interviews with officials in Washington, so that the code they present will conform in all particulars to the administration's requirements and at the same time afford the industry all the advantages that can accrue to it under the law.

"The final formulation of the code will depend on the outcome of further Washington conferences, approval of the code by the board of governors of the National Electrical Manufacturers Association and upon approval by the deputy administrator, by General Hugh S. Johnson, administrator of the National Industrial Recovery Act, and by President Roosevelt after a public hearing.

"A primary requirement on the part of the government for the acceptance of a code is that the association presenting the code shall be truly representative of the industry for which it speaks.

"In a bulletin issued June 20, General Johnson stated among other things:

"'At the hearing described in paragraph 2, every trade association or group proposing a code should be prepared to establish by evidence the requirements of Section 3 (a), Clause 1 of the act, which provides:

"'That such associations or groups impose no inequitable restrictions on admission to membership therein and are truly representative of such trades or industries or subdivisions thereof.'

"Present members of the Refrigeration Division of the National Electrical Manufacturers Association were responsible for approximately 80 per cent of the household electric refrigerators manufactured in the United States during 1932. All applications which have been received by Nema from manufacturers of household electric refrigerators have been accepted and all members have had equal voice in the deliberations of the association.

"The electric refrigeration industry is exceedingly fortunate in being a part of one of the relatively few great trade associations which will receive direct recognition in Washington. There are in the United States approximately 1,000 associations of manufacturers engaged in interstate business. It is not the intention of the administration to set up a great bureaucratic organization for direct contact with all such trade associations. Presumably many of the smaller and less broadly representation groups will be required to affiliate with large industrial institutes or associations in order to maintain the necessary contact with the administration.

"The National Electrical Manufacturers Association is regarded in Washington as one of the major groups in the country, and the Refrigeration Division of Nema has adequate representation in the councils of the parent organization.

"The Refrigeration Division has been and will continue to be almost entirely self governing, and while a general code of fair competitive practice as agreed upon by the federal authorities and Nema will control all subdivisions and sections of the parent association, this code will be quite broad and general in its scope and the sections and divisions of Nema will, no doubt, develop supplemental codes to govern conditions peculiar to their products and markets.

"Such supplemental codes, after necessary approvals are made, will, together with the general code, constitute the law of the industry by which they are drawn."

THOMAS HEADS SALES OF WESTINGHOUSE MICARTA

TRAFFORD CITY, Pa. — H. C. Thomas, formerly assistant to the general works manager of Westinghouse Electric & Mfg. Co. at East Pittsburgh, has been appointed by N. G. Symonds, vice president of the company, to direct sales of the Micarta products division of Westinghouse in this city.

Upon graduation from Purdue university in 1910, Mr. Thomas entered the Westinghouse apprenticeship course.

War duties interrupted his next position, as salesman in the St, Louis office. Since 1922, he has had experience in the New York City merchandising division, as manager; in the Mansfield branch; and as assistant to the general works manager in East Pittsburgh.

Five Filtrine Coolers Used in Terminal

CINCINNATI—Installation of five Filtrine water coolers with Servel machines in the new Cincinnati Railroad Terminal has been completed.

Three of these coolers, consisting of Filtrine model M-40-R coolers and Servel 65-CW compressors furnish drinking water for the waiting rooms; one cabinet, type X-5-S, furnishes drinking water for the clerks in the ticket office, while the fifth unit comprises a circulating water cooling system to supply chilled water at each wash basin of the Terminal Barber

Reichert Honored by Niagara League

BUFFALO—A testimonial luncheon honoring George J. Reichert, winner of the Electric Refrigeration Bureau "Legion of Honor" cup in this district, was given by the Electrical League of the Niagara Frontier at the Buffalo Athletic club on Tuesday, June 27.

Refrigeration distributors who are directors of the league attended.

PATENTS

ISSUED JUNE 20, 1933

1,914,494. LIQUID HEATING AND COOLING APPARATUS. Harvey Feldmeier, Little Falls, N. Y., assignor to Cherry-Burrell Corp., Wilmington, Del., a Corporation of Delaware. Filed Oct. 20, 1931. Serial No. 569,896. 15 Claims. (Cl. 257—85.)

1. The combination of a vat adapted to hold a body of liquid, a jacket for said vat having walls spaced from adjacent walls of the vat, means for flowing a heat exchange medium over the outer surface of said vat and having connections for circulating a heat exchange medium through said vat, a coil movably supported within said coil, a stirrer within said vat between said coil and a wall of the vat, and the means for actuating said stirrer to move the liquid in the vat, said coil and said stirrer being movable to exposed positions out of said vat to render them and the inner surfaces of the vat accessible for cleaning.

1,914,687. LIQUID RETURN FOR INTERMITTENT ABSORPTION REFRIGERATORS. Theodore B. Focke, Cleveland Heights, Ohio, assignor to Perfection Stove Co., Cleveland, Ohio, a Corporation of Ohio. Filed Aug. 7, 1931. Serial No. 555,771. 8 Claims. (Cl. 62—120.5.)

1. In refrigeration apparatus of the intermittent absorption type, communicative means leading from the receiver-evaporator to the generator absorber, said means involving two conduits, one that leads from an absorbent liquid collecting portion of the receiver-evaporator and the other having a full-open receiving end sealed by a body of liquid in the receiver-evaporator when such body is of sufficient volume to fill the receiver-evaporator to a level at or slightly below normal maximum, said other conduit having a portion appreciably higher than any part of the former conduit, the means functioning automatically to return liquid from the receiver-evaporator to the generator-absorber due to difference in pressure in the two vessels at the commencement of the cooling period, said other conduit when the liquid seal is broken serving to cause an approximate equilization of pressure in the two vessels and by reason of its higher position having capacity to receive liquid without its overflowing to the generator-absorber while a flow of liquid is induced by pressure through the first mentioned conduit.

1,914,861. REFRIGERATION. Alvar Lenning, New York, N. Y., assignor to Electrolux Servel Corp., New York, N. Y., a Corporation of Delaware. Filed Sept. 15, 1928. Serial No. 306,181. 21 Claims. (Cl. 62—119.5.)

20. In the method of refrigeration comprising continuous circulation of heat conducting fluid and evaporation thereof into an auxiliary agent, absorption thereof into liquid solution, expulsion thereof from said solution, and condensation thereof to liquid, the step which consists in changing the average concentration of said solution by trapping a portion of said heat conducting fluid out of circulation.

1,914,994. COOLING UNIT FOR REFRIGERATING APPARATUS. Harold A. Greenwald, Detroit, Mich., assignor, by mesne assignments, to Kelvinator Corp., Detroit, Mich., a Corporation of Michigan. Filed March 11, 1929. Serial No. 346,205. 1 Claim. (Cl. 62—126.)

In a refrigerating apparatus, a tank constituting a cooling unit and containing a mixture of lubricating oil and refrigerant soluble with said oil, the level of the mixture being such that space is provided in the tank at the top thereof for the evaporation of the refrigerant, a conduit having a coil substantially horizontally disposed within the tank and terminating above said liquid level in a depending flared portion that is adapted to receive the refrigerant gases resulting from evaporation, and a substantially vertical tube partly submerged in the liquid mixture in substantially vertical alignment with said depending portion, having its lower end spaced slightly above the bottom of the tank and having its upper end above the level of the liquid mixture in spaced relation and terminating substantially within the depending flared portion aforesaid, whereby the refrigerant gases resulting from evaporation of liquid refrigerant in said tank may pass upwardly around the upper end of said tube into said depending flared portion, and the velocity of said gases at this point may be utilized to draw upwardly in said tubing and thence into said flared portion a mixture of liquid refrigerant and oil rich with the later.

1,915,097. ROTARY PUMP. Ralph E. King, Fort Wayne, Ind., assignor to General Electric Co., a Corporation of New York. Filed Nov. 27, 1928. Serial No. 322,227. 7 Claims. (Cl. 230—140.)

1. A pump including a body having a chamber, a displacement member in said chamber having a slot, a blade arranged in said slot, means for actuating said displacement member to pump fluid and for reciprocating said blade in said slot, said displacement member having a single port communicating with said slot, and means actuated by said displacement member for controlling said port so as to utilize the reciprocatory movement of said blade for pumping fluid.

1,915,165. REFRIGERATING UNIT. Axel Ramclau, Chicago, Ill., assignor, by mesne assignments, to Zerozone, Inc., Chicago, Ill., a Corporation of Delaware. Filed Oct. 16, 1930. Serial No. 489,096. 7 Claims. (Cl. 230—58.)

1. In a compressor unit of the class described, a seated cylindrical casing, a stationary shaft concentrically located in said casing and extending through the end walls thereof, said extending ends being threaded, nuts threaded on said shaft and bearing against the casing to lock and seal the shaft therein, bearings mounted upon said shaft, a sleeve concentrically supported upon said shaft by said bearings, a pair of cams formed integrally with said sleeve, a motor having a stator carried by said casing and a rotor carried by said sleeve, a pair of pistons reciprotated by said cams as said sleeve is rotated by said motor, and a pair of cylinders attached to said casing and in which said pistons travel.

1,915,265. THERMOSTAT FOR REFRIGERATING APPARATUS. Francis R. Bichowsky, Washington, D. C., assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Dec. 29, 1928. Serial No. 329,111. 6 Claims. (Cl. 297—5.)

3. In a refrigeration system, control means therefor, said control means comprising a thermostat element containing a mixture of sulphur dioxide and methyl cholride.

REISSUE

18,876. PROCESS AND APPARATUS FOR TRANSFERRING LIQUEFIED GASES FROM ONE CONTAINER TO ANOTHER. Christian Wilhelm Paul Heylandt, Berlin-Britz, Germany, assignor to Fluga Aktiengesellschaft, St. Moritz, Switzerland, a Corporation of Switzerland. Original No. 1,753,785, dated April 8, 1930. Serial No. 345,259, filed March 8, 1929, and in Germany March 2, 1928. Application for reissue filed April 5, 1932. Serial No. 603,424. 17 Claims. (Cl. 62—1.)

15. The process of transferring liquefied gases from one container to another which comprises maintaining a body of liquefied gas in a storage container at a temperature at or near the ordinary boiling point, and when withdrawing liquefied gas from said storage container providing, by the evaporation of liquefied gas, gas material of the same composition in the space above the liquid in said storage container together with heat sufficient to cause the building of pressure in said space, while maintaining the body of liquid in said storage container at a temperature not substantially different from that of said ordinary boiling point.

FILTRINE SYSTEMS USED IN GOVERNMENT HOSPITAL

SPRINGFIELD, Mo.—Five complete circulating drinking water systems have been installed in five separate buildings of the new United States Government Hospital for Defective Delinquents.

Each water cooling system consisted of a model M-75-R Filtrine water cooler having a storage of 75 gallons, hooked up to a Frigidaire water-cooled compressor.

On the incoming water supply line a battery of two style "A" Filtrine filters were installed so that all the water furnished was filtered before entering the water cooler.

Each Filtrine cooler has 50 sq. ft. of evaporator surface and an hourly rating of 40 g.p.h., reduced from 80° to 50° F.

Bureau Estimates 5-Month Sales At 453,330 Units

The following estimates of sales by states for the first five months have been compiled by the Electric Refrigeration Bureau, 420 Lexington Ave., New York City. These figures do not include exports. They are based upon reports from local bureaus.

	Five Months Quota, 52% of Year's Quota	Estimated Total Sales	% Quota Realization
New England Division			
Connecticut	7,964	7,378	92.6
Maine	3,242	2,499	77.0
Massachusetts	20,294	23,512	115.8
New Hampshire	2,085	1,651	79.1
Rhode Island	3,346	3,941	117.7
Vermont	1,365	1,227	89.8
Eastern Division			
Delaware	836	1,187	141.9
Maryland & D. C.	8,291	15,082	181.9
New Jersey	20,291	20,432	100.6
New York	64,453	72,271	112.1
Pennsylvania	35,752	44,801	125.3
East Central Division			
Kentucky	4,646	6,521	140.3
Ohio	26,639	27,887	104.6
West Virginia	3,198	5,597	175.0
Middle West Division			
Iowa	7,921	6,324	79.8
Kansas	5,898	6,077	103.0
Missouri	11,481	18,685	162.7
Nebraska	4,075	4,165	102.2
Pacific Coast Division			
Arizona	1,193	1,344	112.6
California	32,622	23,457	71.9
Nevada	296	333	112.5
North West Division			
Idaho	1,343	914	68.0
Montana	1,448	1,626	112.2
Oregon	4,105	3,047	74.2
Utah	2,002	1,695	84.6
Washington	7,420	4,526	60.9
South Eastern Division			
Alabama	2,844	5,227	183.7
Florida	3,997	3,359	84.0
Georgia	3,399	6,023	177.1
North Carolina	4,472	8,649	193.4
South Carolina	1,782	2,787	156.3
Tennessee	4,072	5,300	130.1
Virginia	4,541	8,262	181.9
Great Lakes Division			
Illinois	31,957	31,443	98.3
Indiana	11,641	9,470	81.3
Michigan	18,299	12,870	70.3
Wisconsin	10,758	6,936	64.4
North Central Division			
Minnesota	8,221	6,819	82.9
North Dakota	1,038	882	84.9
South Dakota	1,330	1,187	89.2
Rocky Mountain Division			
Colorado	3,508	4,234	120.6
New Mexico	567	781	137.7
Wyoming	543	649	119.5
Southwestern Division			
Arkansas	1,905	2,637	138.4
Louisiana	3,393	3,565	105.0
Mississippi	1,426	1,413	99.0
Oklahoma	4,340	6,755	155.6
Texas	10,889	17,903	164.4
Totals	417,128	453,330	108.6

Compact!

The capacitor is built inside the motor frame

And It's A Capacitor Motor

By engineering the capacitor inside the motor frame, Howell Electric Motors Company have overcome the greatest objections to the capacitor motor—the space and appearance factors.

This built-in fractional horse power capacitor motor is compact and neat in appearance. In addition, it is quiet in operation, light in weight, possesses an abundance of power for its rating and provides long-time, carefree service. It is the ideal motor for electric refrigerators and other home appliances.

Horizontal or vertical types are included in this new "Red Band" line. Rubber or rigid mounting is offered on the horizontal models. Write for additional information.

Howell Sales and Service in over 50 Principal Cities

Howell Electric Motors Co.

Howell Michigan

Pioneer Builders of Capacitor Start Motors

At the Chicago Fair

there are Several Installations of the

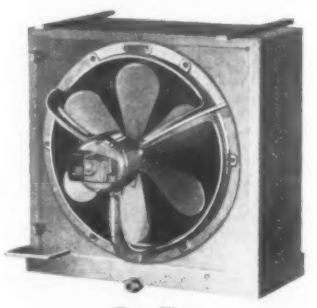
LARKIN

Humi-Temp

UNIT

Front View

See this Efficient Unit in Daily Service



Rear View

AMONG the many installations of the LARKIN *Humi-Temp* COIL UNIT at A Century of Progress the Victor Vienna Garden Cafe installation is one that will excite the interest of distributors and dealers of electrical refrigeration.

A giant cooler, 102' long x 9' wide x 7' high used for the storage of beer, food and vegetables contains four LARKIN *Humi-Temp* UNITS in connection with a Williams Ice-O-Matic Compressor.

The Williams Company who installed this equipment report marvelous efficiency and the owner is thoroughly delighted.

If you are in Chicago see this notable installation—one of many where LARKIN *Humi-Temp* UNITS are used.

The Humi-Temp is Ideal for Beer Cooling

To brewers and distributors of beer this UNIT presents important advantages. It's ideal for controlled refrigeration.

Larkin Refrigerating Corporation

Originator and Manufacturer **- ATLANTA**

WAREHOUSES - Chicago - Brooklyn

100% VERTICAL SURFACE U.S. PATENT No. 1,776,235.

LARKIN COILS

THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

Registered U. S. Patent Office

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS.

VOL. 9, NO. 11, SERIAL NO. 225
ISSUED EVERY WEEK

Copyright, 1933, by Business News Pub. Co.

DETROIT, MICHIGAN, JULY 12, 1933

Entered as second-class matter Aug. 1, 1927

THREE DOLLARS PER YEAR
TEN CENTS PER COPY

CONFERENCE ACCEPTS NEMA LEADERSHIP

1ST FRIGIDAIRE SUMMER DRIVE OPENED IN N. Y.

Factory Crew Presents Plans to 1,000 Dealers

NEW YORK CITY—An intensive summer business campaign was launched by Frigidaire Corp. in the Hotel Astor Friday at a meeting of more than 1,000 dealers, sales supervisors, and salesmen from the New York and New Jersey districts.

The meeting was the first of 54 to be held last Saturday and this week by eight parties of factory officials at which 15,000 dealers and salesmen will be given the details of a selling campaign scheduled for July and August.

The New York convention group was headed by Frank R. Pierce, sales manager of Frigidaire, and consisted of J. C. Chambers, manager of Frigidaire's air-conditioning activity; W. D. McElhinny, commercial division manager; and Charles J. Allen, eastern regional household representative.

The midseason campaign, the 1,000 conventioneers were told, will cover household, air conditioning, and commercial refrigeration.

Although he was unable to attend the New York meeting, H. W. Newell, vice president in charge of sales, sent a message expressing his confidence in the business outlook for the remainder of the year.

The meeting was presided over by Con M. Eakin, general manager of the New York metropolitan operation of Frigidaire. J. T. Collins, general manager of the territory made up of the New York, New Jersey, and Albany sales districts; and George Brady, manager of New Jersey operations, made short talks.

Showmanship is to be the basic theme of the campaign, and every dealer display room will have prop-

(*Concluded on Page 24, Column 1*)

AIR-CONDITIONING SALES SHOW UPTURN IN DETROIT

DETROIT—After getting off to a slow start early this season, sales of air-conditioning equipment have shown a decided pickup in Detroit within the past two months and a half, and it is now estimated by Sterling S. Sanford of the Detroit Edison Co.'s power sales division that some 30 installations of air-conditioning systems have been made here so far this year.

A substantial majority of this season's sales in Detroit have been to commercial establishments purchasing fairly good-sized systems. Several have been small jobs for offices, and a few have been residential installations.

Following is a resume of some of Detroit's more important air-conditioning installations this year:

The Cunningham drug store at 1120 Griswold St. and Shapiro's drug store in the First National Bank building have both installed Frigidaire equipment. These installations are described on page 18 of this issue of the NEWS.

A 30-ton system using Universal Cooler refrigeration equipment has been purchased by the management of Detroit's new Trans-Lux theater on Woodward Ave. Hotel Fort Shelby's coffee shop is now air conditioned by a system using 10 tons of Frigidaire

(*Concluded on Page 24, Column 4*)

Blood Addresses N. Y. Dealers by 'Phone

DETROIT—Howard E. Blood, president of Norge Corp., used the long-distance telephone to address a dealer meeting held at the company's New York City distributorship on July 7. Mr. Blood talked from Detroit at 9 p. m., and his words were carried to all dealers at the meeting through amplifiers.

General Electric Builds 10-Ton Machine

CLEVELAND—A new 4-cylinder, 10-hp. condensing unit for room cooling and other commercial applications has been introduced by the electric refrigeration department of the General Electric Co.

Operating with the 10-hp. motor at a speed of 275 r.p.m., this new unit develops a capacity of from 80,000 to 84,000 B.t.u.'s per hour for room cooling work. The new unit may also be operated with a 7½-hp. motor for certain applications.

For room cooling applications, the new CM-10 unit, as it has been designated, may be used in conjunction with General Electric room-cooling units EC-3 and EC-14.

FRIGIDAIRE REPORTS ROOM-COOLING JOBS

NEW YORK CITY, July 10.—Within the last two weeks Frigidaire air-conditioning equipments in the New York metropolitan area have been sold for installation in places ranging from individual offices to a room in which mosquitos are grown under observation in order that scientists may learn more of malaria germs.

Air-conditioning salesmen under the direction of J. W. Mersfelder, manager of this division of Frigidaire Sales Corp., have been working day and night since hot weather set in, according to Con M. Eakin, general manager, with the result many interesting sales have been made.

The installation to aid in malaria research was purchased by the Rockefeller foundation, and has gone into service in the laboratories of that institution which specialize in the study of tropical maladies.

So that the quality of its product may be tested under the necessary

(*Concluded on Page 24, Column 2*)

2,500 MAJESTIC DEALERS ATTEND REUNION AT FAIR

Contest Winners Guests At Factory, Fair, And Dinner

CHICAGO—Grigsby-Grunow Co., manufacturer of Majestic refrigerators and radios, played host to nearly 2,500 dealers at the Majestic dealer reunion held here July 5. Majestic officials claimed that it was the largest gathering of dealers for any one company to be held during A Century of Progress Exposition.

Every state in the country was represented at the reunion. The prize for the representative who came the greatest distance to attend the reunion went to Charles Forrest, managing director of International Radio Co., Ltd., of Sydney, Australia.

The dealers were given admission tickets to the exposition, and were

(*Concluded on Page 24, Column 3*)

BUREAU WILL OPEN FALL DRIVE SEPT. 30

NEW YORK CITY—Prizes aggregating approximately $1,200 will be offered to local bureaus next fall by the Electric Refriegration Bureau as one of the features of Electric Refrigeration Week, to be held Sept. 30 to Oct. 7.

This plan of activity, submitted by Manager George N. Brown at the meeting of the bureau's plan committee, held in connection with the recent convention of the Edison Electric

(*Concluded on Page 24, Column 3*)

Electrical Industries to Have Broad Code with Sub-Codes For Product Divisions

Manufacturers of Refrigeration Parts and Supplies Plan Affiliation with Nema

By Phil B. Redeker

DETROIT—With the feeling predominant that manufacturers of electric refrigerators who are not members of the Refrigeration Division of the National Electrical Manufacturers Association should and will join Nema to work under and with that association in formulating a trade code in conformity with the provisions of the National Industrial Recovery Act, some 75 representatives of manufacturers of electric refrigerators, parts, materials, and supplies adjourned a one-day meeting held here July 6 apparently satisfied that the proper initial steps had been taken towards the course of action required by the law.

Near the close of the meeting G. M. Johnston, president of Universal Cooler Corp. and chairman of the Refrigeration Division of Nema, who was presiding, asked—"Am I correct in assuming that it is the feeling of this meeting that we ask for members of this industry to come along and join Nema, and that we will proceed under their banner? Are there any objections?"

There were no objections and the chairman suggested that non-member companies make application for membership immediately. In the preceding discussion a number of the representatives of non-member companies had signified their intention of making application for membership.

The parts and accessories manufacturers, in meetings held before and after the main meeting, had considered a course of action and agreed to a resolution proposed by Harvey B. Lindsay, president of Dry-Zero Corp., which reads as follows:

"It is the express sense of this meeting that it will be wise to form a refrigeration accessory manufacturers group for the purpose of joining the Refrigeration Division of Nema, with the request that at least one member of the executive committee of the Refrigeration Division be selected from the membership of this group."

Walter G. Seeger, vice president of the Seeger Refrigerator Co., was selected by this group as its chairman and plans were made to contact manufacturers in this classification not present in order to get their reactions to the idea expressed in the resolution.

A group consisting of Louis Ruthenburg, consultant to the Refrigeration Division of Nema; G. M. Johnston, president, Universal Cooler Corp.; Howard E. Blood, president, Norge Corp.; and George W. Mason, president, Kelvinator Corp., were to leave July 10 for a conference with Nema officials in New York City, at which time they will make a report on the meeting held in Detroit, and bring up the question of the affiliation of the parts and accessory manufacturers.

Upon his return from this meeting

(*Concluded on Page 11, Column 2*)

26 AIR CONDITIONERS OPERATE IN CHICAGO

CHICAGO—Commonwealth Edison Co. has contracted to supply power for 26 large air-conditioning installations in the city of Chicago since the beginning of 1933, with the result that its load has been increased by more than 1,100 kilowatts.

Most recent addition to this list is a North State St. Woolworth five-and-ten-cent store, which has purchased Carrier equipment. Refrigeration is produced by a 300-hp. motor hooked up to a 285-ton centrifugal compressor, installed in the second basement. A 40-hp. pump to circulate the water in the cooling and washing process, and several supply and exhaust fans of approximately 100 hp. complete the equipment.

Other installations served by Commonwealth Edison are: Adler Planetarium, 116 hp.; R. R. Donnelley Co.,

(*Concluded on Page 24, Column 2*)

Complete minutes of the All-Industry Conference in Detroit are published in full in this issue.

See page 2.

Friendship Supersedes Competition

Executives Find Much to Talk About Besides Codes and Laws After the All-Industry Conference in Detroit

Upper left: B. W. Palmer (Palmer Electric Co.); J. J. Huncove (Ilg Electric Ventilating Co.). Upper middle: Louis Ruthenburg (consultant to Refrigeration Division of Nema); J. A. Harlan (Kelvinator); Charles R. D'Olive (Stewart-Warner). Upper right: G. M. Johnston (Universal Cooler), chairman of the meeting. Lower left: H. Woodhead (Truscon Steel Co.); Elston Herron (Electric Refrigeration News). Lower middle: G. M. Johnston; Harry Hunt (Trupar); R. E. Imhoff (Westinghouse); Thomas Evans (Merchant & Evans). Lower right: H. V. Higley (Ansul Chemical); M. A. Martin (Uniflow); Lester U. Larkin (Larkin Refrigerating Corp.).

Leonard Reports Gain In June Sales

DETROIT — June was the best month in the history of the Leonard Refrigerator Co., with shipments of electric refrigerators 75 per cent ahead of those of the same month a year ago, according to R. I. Petrie, general sales manager.

Unfilled orders on hand as of July 1, 1933, were 566 per cent of those of the same date a year ago, or more than five and a half times as many, Mr. Petrie declares.

COMPLETE AIR-CONDITIONING DIRECTORY IN THIS ISSUE

Refrigeration Manufacturers Discuss Methods of Cooperating Under Terms of the National Industrial Recovery Act

Executives Meet in Detroit at Call of G. M. Johnston, Nema Chairman

• • •

REFRIGERATION MANUFACTURERS' CONFERENCE HELD AT MACCABEES AUDITORIUM, WOODWARD AVE. AND PUTNAM ST., DETROIT, MICH., ON THURSDAY, JULY 6, 1933

G. M. JOHNSTON, president of Universal Cooler Corp., Detroit, and chairman of the Refrigeration Division of the National Electrical Manufacturers Association, presiding as chairman.

LOUIS RUTHENBURG, consultant to the Refrigeration Division of the National Electrical Manufacturers Association, assisting the chairman.

The meeting was called to order at 2:00 o'clock P. M.

• • •

COMPLETE MINUTES OF THE CONFERENCE

CHAIRMAN JOHNSTON: Gentlemen, by way of an explanation for calling this meeting as it has been called: When we were faced with the enactment of the National Recovery Act, we were apparently and rather definitely the only group thoroughly organized in the low-pressure mechanical refrigeration field who were prepared to attempt to meet the situation.

As I think the majority of you know, 75 to 80 per cent of the volume of business done is represented in the Refrigeration Division of Nema. The Association has always been open for membership, but we who have been members realize that there has been a certain amount of criticism aimed at this particular group, evidently with the thought that it was attempting to dominate the industry. As one of the smaller manufacturers, and knowing the treatment that has been accorded myself and my company, I know such a charge to be false. Even within the Refrigeration Division there have always been members who have been doubtful whether it was the correct policy to carry on under the Nema organization. But as we have gone into the problem immediately before us, I think the majority of us are impressed with the fact that through good fortune, if not by good judgment, we find ourselves today in the proper location.

In calling this meeting we are leaving the future open for discussion. We want cooperation and suggestions from non-members, and we want them to go along in the most constructive way. We think that we can show the members of the industry present that the proper way is to go along in Nema. If a majority might think otherwise, then it is a matter for further consideration.

Before presenting the information that we have accumulated in the last month or six weeks, and in order to get some discussion off the floor, I am going to take the liberty of calling on Mr. Thomas Evans of Merchant & Evans Co., who has been very helpful in making definite suggestions. As you all know, we issued an invitation for suggestions and help in the problem before us. Mr. Evans has taken a very definite and sincere interest, and as I say, with the object of getting the discussion on the floor rather than having it come from officers of the Nema organization, I am going to ask Mr. Evans to bring up the questions that perhaps many of you are familiar with, as Mr. Evans has given a certain amount of publicity to his ideas. Mr. Evans.

EVANS WANTS SQUARE DEAL FOR SMALL COMPANIES

MR. THOMAS EVANS: (President, Merchant & Evans Co., Philadelphia.) Mr. Chairman and gentlemen: I think we have all come here with the idea that we are to consult together for the best interests of the industry and for the best interests of all those who are engaged in it.

This Industrial Control Act is such a revolutionary measure that it is very difficult to see how industry can work under it with any benefit. The provisions of that Act, in both letter and spirit, call for an equal opportunity for all those engaged in the industry. That is an essential qualification when it comes to control. If the government is going to be a partner in this thing and if they are going to force business to operate under it, then it is most essential that a proper mode of operation be provided which will do *justice* to all.

If the natural flow of commerce were to dictate the course of each individual business, it would take the line that American industry has always taken heretofore. It would be the survival of the fittest. Those that had something to offer would get a share of the market. But, when the government proposes, after these three years of depression, to regulate industry, to bring it within the government control and supervision, with the power to put recalcitrants and those that won't play ball out of business, why then, it is essential that the elements already in the business should provide a vehicle whereby those that want to do right can live under the rules and prosper.

When this invitation came to participate in discussion, I thought it was well for people who had watched the course of this legislation to put forward suggestions for the formation of an organization to function under the new Act. For that reason alone, and in a questioning spirit only, I made definite suggestions to bring forward the questions that I thought should receive consideration.

Government's Aim Is More Employment and Proper Wages

Under this Act it is essential that there shall be an association to promulgate a code, and that the code must provide some very definite things. The two great essentials that the government is striving for, as you all know, is that there shall be *more employment*, and that there shall be maintained at the same time a *proper wage*, so as to give a living to the people in industry—the wage earners. The government is not directly interested beyond that point, but it is indirectly interested in seeing that the tools or ammunition are provided for carrying those two ideas into effect.

Now, it follows as night follows day that if you provide for a higher wage scale and if you provide for fewer hours of labor during the week, why, you must provide a reasonable profit on the operations, so as to enable this increased expense to be borne.

Logical Evolution of Plan Indicates Control of Production

The one most important question is the coordination of these various questions into a whole. One of the most important considerations that should come before a conference of this sort is a determination as to whether, if you fix minimum wages and maximum hours of employment, you have not got to go these further and fix a *profit scheme*, so as to enable these men to be employed. If you do that, it is logical to expect that you may have to touch on that most dangerous point in this whole revolutionary scheme of industrial control, and that is the question of *production*. How that can be handled, whether it can be done or not, remains to be seen. It may not be practicable to ever undertake to handle that particular dangerous rattlesnake—the *control of production*. It should be considered here, however, and if it is, then, you must consider those other elemental questions connected with it, such as the *fixing of quotas* and what not.

All that is essential, though, if we are going to produce greater employment and pay a living wage.

Now, if it can be done and if those four great cardinal points can be covered, the result is naturally going to be that more wages will be paid, that more people will be employed, and that you are going to stimulate the consuming public. The consumption of electric refrigeration is going to be vastly enhanced and that will enable all these purposes to be served.

Nema By-Laws Seem to Give Officers Complete Control

Now, as for the vehicle to carry out this program, I have questioned the organization of this industry as a division of the Nema, as to whether that is the proper method of functioning under the Act. The Nema organization, from a survey of its corporation papers and its set-up, would seem to indicate that the policy committee and the executive officers and the governors of that organization, who are not primarily interested in this industry, would have the *control* of its policies. I do not see how that could fit in. If the Nema can so fix this thing that they can make the electrical refrigeration industry absolutely autonomous, then there is a chance of working through this vehicle, because there are many advantages in it. There are many advantages to be had by working through that vehicle to the adoption of a code which will be approved by the Government. There are many things in that organization which would permit any rules that are adopted to be enforced and carried on, without the organization of a new and expensive machinery for this industry alone.

Autonomy Must Be Guaranteed to Electric Refrigeration Industry

But it seems to me that there is one vital thing which must be provided to the satisfaction of all concerned. That is an absolute guarantee of *autonomy* for the electrical refrigeration industry. The people that are to determine its policies should be electrical refrigeration manufacturers and nobody else, because their views are important. It is a big industry, and its needs are the primary purpose of this organization.

Now, that is all I have to say about that point.

I want to repeat that I have not come here with any idea of antagonism to Nema, nor in any spirit of antagonism to the large elements in this industry. The people who are producing the most of the refrigeration equipment, who have put the most money and endeavor into it, and who have spread the gospel of electric refrigeration everywhere, should have a major say in this thing. But the small people who are in the industry must be guaranteed a square deal by those big people. I do not believe for one minute that there ought to be a question of these big producers surrendering a possible control to a flock of small producers whose aggregate does not match theirs in any way. But I do believe that those big fellows must be *big enough* here to guarantee *a fair and square deal* to the small fellow in this whole consideration.

Thank you very much. (Applause.)

CHAIRMAN JOHNSTON: Mr. Potter, you have expressed some views on this organization. Would you care to mention them at this time?

POTTER OBJECTS TO PRODUCTION QUOTAS

T. IRVING POTTER: (President, Tricold Refrigerator Corp., Buffalo.) Mr. Chairman and gentlemen: I have read with a great deal of interest Mr. Evans' views as he expressed them in ELECTRIC REFRIGERATION NEWS. Mr. Evans stressed a great deal the desire of bringing forth the viewpoint of the small manufacturer. I think I can plead guilty, in the matter of size, to being probably the smallest manufacturer here. I have spent seven years of intensive preparation to really be in position to call myself a manufacturer. I am sold on the industry from the top to the bottom as to the future.

I am also sold on the utter sincerity of Mr. Evans' viewpoint. I personally believe that there is one very dangerous view that Mr. Evans has: Mr. Evans speaks of *quotas*. I agree with Mr. Evans that price must be maintained. I hold with the members of Nema who have expressed their views to me, that prices must be fixed on the basis of a profit. The tremendous danger of establishing quotas, if that were done, is that it will automatically put into the discard the fundamental thing that has brought this group of men up to the point in the industry where they are. I do not believe there is a man in this room representing any concern of consequence who did not get there by initiative, originality, courage, and the use of good, plain principles of competition. That is the one thing that has brought America up as an industrial nation. Just so soon as American industry attempts to freeze at the point where it stands today and says that because one manufacturer in the year 1932 produced a certain *percentage*, that it becomes his by Divine right, and another manufacturer produced another percentage, and follows that through to a logical conclusion, it would literally freeze the industry in the hands of the large manufacturers. So long as the industry produces merchandise and sells it at a profit, I believe the greater agility of the small manufacturer, his freedom to make quick shifts, is all the protection he needs against the mass of the big manufacturer.

Now, Mr. Chairman, I want to register very strongly, if I may, an objection to any thought of a quota system. Let us keep the good old American principle. If we have ability, if we have some courage, let us stand or fall in our individual capacities on that basis. Let us not adopt the Chinese system of doing everything that we can to keep things as they are. China has tried that for a few thousand years, and I do not think it has worked very well.

Thank you. (Applause.)

KRITZER HAS FAITH IN FAIRNESS OF INDUSTRY

CHAIRMAN JOHNSTON: Mr. Kritzer, do you care to express your ideas on this question?

R. W. KRITZER: (Vice president, Peerless Ice Machine Co., Chicago.) Mr. Chairman and gentlemen: I represent a very small manufacturing concern, and I came to this meeting expecting to look after our interests in a very small way.

I agree with Mr. Evans that the Refrigeration Division of Nema must be controlled by ice machine men, if it is going into this to represent the small company as well as the large one. As to the question of a quota system, I don't think we will ever come to that. I do not think that is a danger, it will never go that far. If we will go slow on this whole proposition and if the large fellows will look after the small fellows as they have in the past, we will all come out all right.

CHAIRMAN JOHNSTON: Are there any other members of the refrigeration industry, that is, the mechanical section of it, that have views in this matter which they care to express? I would like for this meeting to be a little less formal than it has been up to this time.

BAPPLER WANTS TO KNOW PROCEDURE

C. T. BAPPLER: (Bush Manufacturing Co., Hartford, Conn.) Mr. Chairman, like Mr. Kritzer, we are a small manufacturer of a product that is used in refrigeration. In discussing this subject with different men, I notice a desire to find out how to go about a lot of these problems. For instance, we speak of the possibility of being associated with Nema. All of our problems are somewhat different and the question in my mind (and a lot of others in similar business) is whether or not we should form separate groups. The question is not so much with *whom* we should group or *what* we should do when we group, but *when* can we do it and *how* can we do it, and can we do it *right now*? That is the thing, I think, that most people are interested in knowing.

CHAIRMAN JOHNSTON: On that question, we appreciate that our powers are very limited as to bringing in non-electrical members of the refrigeration industry. We, I think, must confine ourselves for the immediate business of this meeting to the manufacturers of mechanical refrigeration. As I understand it, the non-electrical people have held some meetings this morning, and we can follow up with a discussion on the best way to co-operate with those groups.

If there are no more suggestions or questions, I think this would be an opportune time for Mr. Ruthenburg to give this meeting the information that he has so tirelessly accumulated since the introduction of this Act. Mr. Ruthenburg:

RUTHENBURG PRESENTS DATA COLLECTED BY NEMA

MR. LOUIS RUTHENBURG: (Consultant to Nema Refrigeration Division, Detroit.) Mr. Chairman and gentlemen: I should like to discuss this question with you in what seems to me to be a logical treatment.

First, as to the National Industrial Recovery Act and some of its present implications,

Second, as to the trade association requirements that have grown and are growing out of this legislation,

Third, the manner in which the refrigeration industry, as represented by the Refrigeration Division of Nema, has kept in touch with these developments from day to day, and to report to you in that connection just what has been accomplished up to date,

Fourth, I should like to discuss the methods that are being considered for the administration of this Act.

In dealing with the subject in this way I hope that I can answer most of the questions that have been asked here in open discussion and some of the questions that may be in your minds unasked.

Industry in the Midst of Being Revolutionized

None of us can afford to assume anything but the most serious attitude towards this present legislation. Industry is not *about* to be revolutionized; it is not on the verge of revolution; we are *in the midst of it*. The present law is a very predictable outgrowth of the evolution in the attitude of the social body towards the industrial body during a great many years in the history of this country.

Those of you who have observed, first, the untrammeled, free competition that obtained in this country during its period of greatest growth, followed by the reaction of the trust-busting nineties, from which we inherited the Clayton Act and the Sherman Act and the Interstate Commerce Commission, then observed the regimentation of industry during the war and the wild spree in which industry indulged in the ten years preceding 1929, should be more or less prepared for this sort of a development.

It has come about with rather explosive suddenness, induced by a world-wide depression, and the implications of the present law are simply a reflection of things that already have occurred in every other industrial country in the world, regardless of whether its background was Communistic or whether it leaned towards dictatorship or whether it leaned towards some other particular type of social change.

Law Designed to Put People to Work And Raise Purchasing Power

Now, the theory and the central purpose of this legislation, as has been said here before, is to *put people to work* in the greatest possible number and to guarantee to all of them an effective *purchasing power*. Please keep your mind concentrated on that central theme, because everything else is secondary to it in the eyes of the Government.

As compensation for cooperation in this measure, the government offers industry certain privileges, notably temporary and somewhat vague freedom from the provisions of the anti-trust laws. It offers to labor privileges for which labor has been striving ever since the inception of the American Federation of Labor. It gives labor privileges without precedent in the history of this country.

Those are the secondary issues which have been offered as rewards to labor and industry for putting into effect the central objectives of this bill.

Effect of Law Will Be To Increase Costs

Now, an objective in this bill is to *raise the wage of labor*. We are also told that we should be slow and very deliberate in raising prices. That sounds like a definite anomaly, and it may be; but it is not necessarily so. There are a great many factors in this legislation which tend to increase *costs*.

Obviously, an increased wage tends to increase costs.

We must pay for the Federal administration of this bill, which will add something to our already heavy burden of taxes.

The cost of administration within our trade associations is not an inconsiderable item—not dues, necessarily, so much as the necessity for principal executives spending a great deal of their time in association work.

There are other elements of added cost implicit in this law. Now, when such things exist, and you are told that prices must not be precipitously increased, it does not sound like good arithmetic.

A Race Between Economics and Psychology

The possible offset of that apparent anomaly seems to be the possibility of inducing a buying habit on the part

(*Continued on Page 6, Column 1*)

NOW *a New Profit Maker for G-E Refrigerator Dealers*

GENERAL ELECTRIC

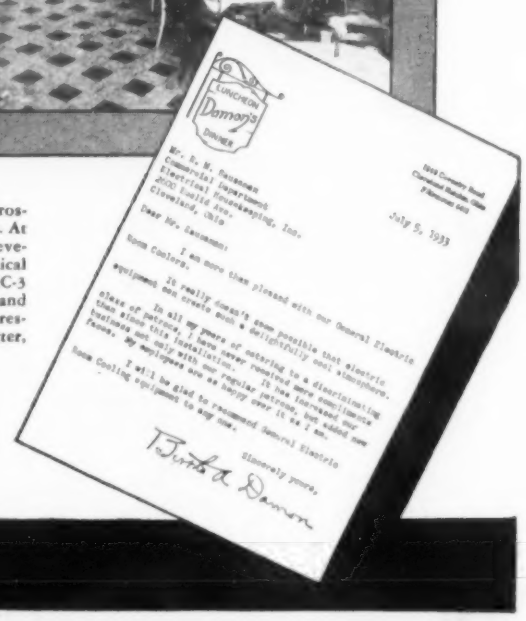
ROOM COOLERS

Model EC-14 for wall or ceiling mounting

Model EC-3 for floor mounting

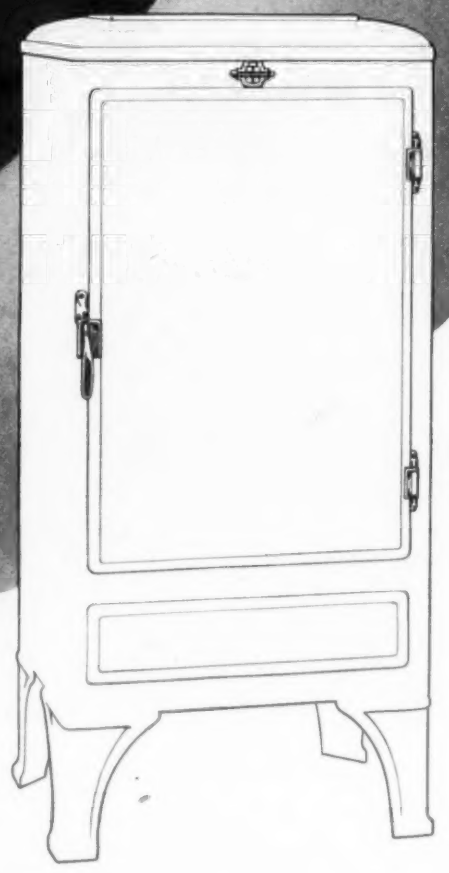
GENERAL ELECTRIC Room Coolers open up another new avenue of profit for G-E refrigerator retailers. They are available through all General Electric refrigerator distributors. The market for room coolers is wide and responsive. Homes, stores, offices, restaurants, hospitals—wherever people live, work or gather—all are preferred prospects. G-E Room Coolers, developed and perfected in the famous General Electric Research Laboratories, *cool* the air, *lower* the humidity, *purify* the air and *circulate* it quietly and gently without creating drafts. They are made in floor-mounted style and for wall or ceiling mounting. The coolers occupy a minimum of space, the floor unit measuring less than 3 feet high and 3 feet long. The cooling mechanism is remotely located from the cabinets—in the basement, an adjoining room or a closet. Condensing units for General Electric Room Coolers are available in sizes up to the new Model CM-10 which can be equipped with 7½, 10 or 15 horsepower motors. Operation is as dependable and trouble-free as all General Electric products.

● The General Electric Room Cooler now takes its place beside G-E Refrigerators, G-E Ranges and G-E Dishwashers as another great business producer in the General Electric line of specialty appliances. G-E refrigerator retailers are already proving its exceptional profit opportunities. General Electric Company, Electric Refrigeration Department, Section DF71, Nela Park, Cleveland, Ohio.



● Restaurants are prime prospects for G-E Room Coolers. At Damon's Tea Room in Cleveland, pictured above, is a typical installation, consisting of 5 EC-3 Floor Type Room Coolers and 2 CM-8 3 horse power Compressors. Read the owner's letter, expressing keen satisfaction. The G-E salesman sold her on room cooling—and General Electric's name and reputation helped close the deal.

The new Frigidaire line has broken all Sales Records!



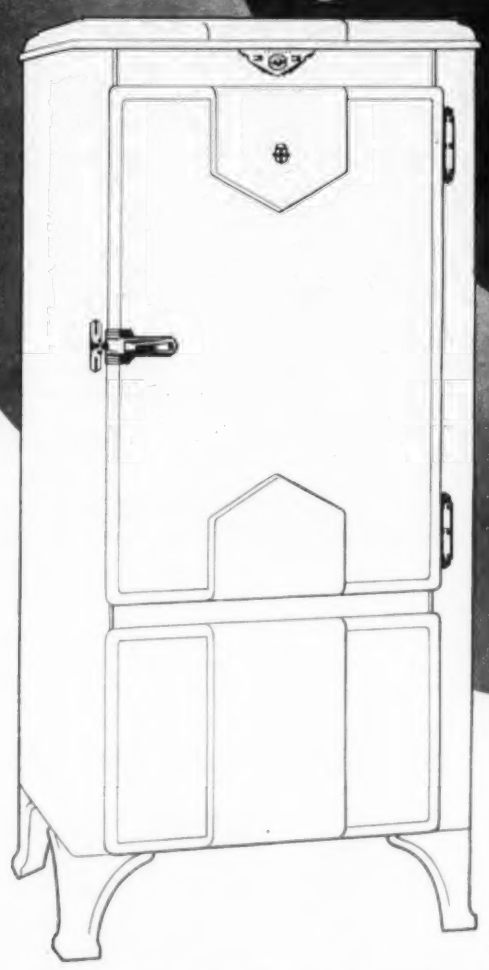
A GENUINE FRIGIDAIRE FOR ONLY $96* . . . USES LESS CURRENT THAN ONE ORDINARY LAMP BULB

A record-breaking demand for Frigidaire—a demand that has put thousands of men to work and has kept the Frigidaire factory, dealers and salesmen working full time—a demand which exceeded all expectations—shows that the public appreciated fully what Frigidaire offered this year . . . an entirely new line of Standard and Super Series Frigidaires—a low price—a new standard of economical operation—unequalled quality—a host of new convenience features—a new mode in refrigerator design and beauty—and the name Frigidaire. These, combined with a new public confidence—have made 1933 another Frigidaire year!

**Plus Freight—Installation and Federal Tax Paid*

Frigidaire

And there will be no let-down in July and August!



THE NEW DE LUXE ALL-PORCELAIN FRIGIDAIRE...

THE FINEST ELECTRIC REFRIGERATOR EVER BUILT

The momentum gained during the first half of 1933 might have been enough to have carried Frigidaire through a successful July and August, but during these two months Frigidaire is putting on a tremendous advertising and selling drive that will make *certain* of two more record-breaking months.

The Frigidaire July-August campaign has everything! It's complete! A new series of unusual and dramatic store demonstrations—new window displays—new store displays—smashing magazine and newspaper advertisements—plus a nation-wide evening radio broadcast featuring Jane Froman, Howard Marsh and Jacques Renard's famous orchestra. Again Frigidaire dealers and salesmen will have reason to be mighty glad they are selling the leader!

A General Motors Value

GM FRIGIDAIRE

(*Continued from Page 2, Column 5*)

of the population of the United States that will bring about an increase in volume which will in some degree, at least, absorb these super-burdens; and it is quite possible that that may happen.

We already have seen the tremendous increase in buying that has been induced in part by a mere atmosphere of inflation. We do not know to what limits that impulse will extend. So one might sum up this apparently contradictory situation by saying that it is a race between the economics of production costs and the psychology of buying.

The situation as regards the interpretation of this bill is changing in Washington from day to day and from hour to hour. There are a great many people who will attempt to interpret for you the provisions of this law. The only way we have found in which one can know what is happening is to keep constantly in touch with the constituted authorities in Washington and get from them the changing attitude, the changing precedent, as these hearings take place.

Government Attitude Toward Trade Associations

Now, in connection with the trade association requirements, there are certain fundamental stipulations that are not subject to mistinterpretation. Any group which presents a proposed code in Washington must be *truly representative* of the group for which they speak.

Second, their organization must be such that they admit to membership equitably all of those engaged in the same trade or occupation.

We feel that the refrigeration industry is peculiarly fortunate to be connected with an organization that meets those requirements. It has been said repeatedly in Washington that it is not proposed to set up an enormous bureaucratic organization in Washington to deal with all of the trade groups individually.

I have heard it said on good authority that there are in this country something in excess of 2,700 trade associations, of which approximately 1,000 represent manufacturers engaged in interstate commerce, and therefore coming directly within the provisions of the law. It would be a catastrophe if Washington should attempt to set up an organization to deal individually with 1,000 trade associations, and I think there is no such intent.

There may be a considerable regrouping of existing trade associations in order that they may have contact with a reasonably compact Washington organization. The National Electrical Manufacturers Association apparently is accepted as one of the major groups with whom direct contact will be and has been established.

Now, as to the method by which this group has arrived where it is, if anywhere: The changing provisions of this law and the changing attitude of the Administration have been followed very carefully from the time the measure was first proposed. A rather extended discussion of the proposed law took place when we did not know what its final provisions would be, when it was still in the House, and from there on we tried to follow the various changes that have been made and to keep in touch with them.

Tentative Code Formulated by Refrigeration Division

When the legislation had been enacted, the Refrigeration Division formulated a tentative code, not with any thought that it would be accepted or would even be proposed, but for the purpose of crystallizing the point of view of the members of the Refrigeration Division.

At the time this code was formulated, the Board of Governors of Nema had arranged a discussion with the Deputy Administrator who would be in charge of this division of industry, and for the purpose of their discussion had drawn up a code. A meeting of the Refrigeration Division was held preceding the meeting of the Board of Governors, and it might be said that both of those codes were drawn with the thought of making them as broad and general and as simple as possible. They were drawn without any correspondence or contact between the two groups drawing the codes, and it developed when the codes were compared, that in their essential provisions they were identical.

The code cannot be given to you in terms of its verbiage, because that is subject to change. I can, however, give you the essential general provisions that were discussed in the last meeting I attended, just before a meeting was to be arranged again with the Deputy Administrator, and I can give you the changes that were made or suggested in that code in the hearing which took place yesterday. The hearing is still going on. The Refrigeration Division of Nema is represented in that committee of five by Mr. George Mason, president of Kelvinator.

How the Code Will be Applied in Nema Organization

Now, as to the measures of administration which have been discussed: The code will be a general code for the government of all members of the National Electrical Manufacturers Association. It will, as I have said, be very broad and very general in its terms.

The members of N. E. M. A., approximately 260 in number, will be divided into groups corresponding to their products, just as the Refrigeration Division is a group designated to control the operations of that particular branch of the industry. The theory is that each group shall be, as far as may be possible, autonomous.

It is proposed that each of these groups may draw a *supplementary code* to govern problems specific to its products and its markets, which code after being approved by the Board of Governors of Nema will become a part of the general code.

Executive Committee of Refrigeration Division Is the Governing Body

As far as the Refrigeration Division is concerned, it is proposed that the governing body shall be the executive committee. That, I believe, goes as far as may be possible to guarantee autonomy to the refrigeration industry and to put it on its own feet.

The whole theory and atmosphere of this thing, from the administration down through the trade associations, is to give each group all of the authority it can handle and allow the group to run its own industry until such time as it proves conclusively that it cannot be trusted with that responsibility.

As far as the present by-laws of Nema are concerned, they confine membership to manufacturers of electrical products. There is every reason to believe—and this is wholly tentative—that those by-laws may be liberalized to include manufacturers which are not, strictly speaking, electrical manufacturers. At the moment that provision is not made, although it is implied in the code now under discussion.

Suggests that Supply Companies Organize and Decide on Affiliations Later

My suggestion to the non-electrical manufacturers, or the manufacturers of non-electrical units and parts in this industry, is that they should go ahead and effect an organization among themselves, so that they understand who they are and in a general way where they are heading. If or when they should decide that they want to affiliate with Nema, that can be considered, and if at that time there is a definite decision as to the provision of the code or by-laws that permits that, it can be arranged.

I am hopeful that joint committees can be organized with existing trade associations which have interests more or less parallel to those of this industry.

Now, I have tried to be as brief as possible and at the same time give you the general picture as I see it. I shall try now to give you a very quick picture of the provisions of the code that is now under discussion, and at the same time bring you up to date as nearly as I can as a result of a telephone conversation with Washington this morning.

SYNOPSIS OF PROPOSED CODE OF FAIR COMPETITION

The following synopsis of the National Industrial Recovery Code, as proposed by Nema, for the electrical manufacturing industry, simply represents tentative proposals which are being considered after exhaustive discussion of the matter in the Refrigeration Division of Nema, and after a meeting of the Code Committee appointed by the Board of Governors—one member of this Committee being a member of the Refrigeration Division of Nema.

It should be borne in mind that the final scope and specific provisions of the Nema code will be subject to decisions to be made in another meeting of the Board of Governors of Nema, and by influences which may be brought to bear in a public hearing.

For these reasons, no attempt is made to quote any provision of the code, but we simply give a broad interpretation of the proposed tentative provisions.

1. The first part of the code is devoted to definitions of terms used in the body of the code.

2. The code next includes the mandatory labor provisions quoted from section 7-a of the National Industrial Recovery Act.

3. Next, minimum wages are stipulated for adult males, adult females and minors. The initial figures submitted will depend upon current practice in the industry and may be influenced by precedents established through the discussion of earlier codes.

4. The code next provides for maximum weekly working hours.

Code Provides Against Monopolies And Oppression of Small Enterprises

5. The next section of the code provides against inequitable admission to membership, against monopolies, and against oppression of small enterprises.

6. Provision is made for adoption of uniform accounting and uniform costing.

7. It is then provided that there shall be no selling below cost.

8. Provision is made for submission annually to stockholders and to Nema of each member's annual statement and balance sheet.

9. Provision is made for filing general statistics with the trade association.

10. Provision is made for alterations in the code by the Board of Governors or the Executive Committee.

11. It is stipulated that members may be grouped according to product classifications and that a supervisor or other form of supervising agency is to be appointed by the Board of Governors for each product classification.

12. Penalties for failure to observe the code are set forth.

13. Provision is made for supplementary codes to be drawn by the various product classifications, subject to approval by the Board of Governors.

14. It is stated that the provisions of this code shall be confined in application to that part of each manufacturer's business which is defined under the electrical manufacturing industry.

15. Finally, it is stipulated that the code shall become effective ten days after approval by the President of the United States.

Now, in spite of repetition, I want to make it clear that the code is to be rediscussed with the Board of Governors, and upon formulation of the code after that, an application is to be made for a public hearing.

This public hearing is presided over by the Deputy Administrator, and he has with him an advisor from the Department of Labor, another from the Department of Commerce, and another from the Administrative Legal Department. It is an open meeting, attended by anyone who has any interest in the questions under discussion.

When Code Is Signed by President Roosevelt it Becomes Law

After this meeting the Deputy Administrator approves, disapproves, or suggests revisions in the code, and after those are agreed upon he submits it with his recommendation to General Johnson, who after approval submits it to the President for signature. After the President's signature and upon the effective date, it becomes *the law of the industry* to which it applies, just as though it were a part of the statutes.

Now, I have covered this perhaps a little too briefly, but I shall be very glad to answer any questions that I am able to answer if you will ask them. (Applause.)

LINDSAY INQUIRES ABOUT HOURS AND WAGES

H. B. LINDSAY: (President, Dry-Zero Corp., Chicago.) Mr. Ruthenburg, did I understand that white collar labor is to be included in the minimum wage and maximum hours?

MR. RUTHENBURG: A separate schedule of maximum hours will be established for white collar labor. I understand, however, that they will be controlled by the minimum wage. I was told this morning, Mr. Lindsay, that the present thinking—and please accept all these things as wholly tentative—the present thinking is that a schedule of 40 hours may be effectuated for white collar labor as against 36 hours for production labor.

CHAIRMAN JOHNSTON: Mr. Evans, you brought up a very interesting point, and one that I am sure affects every member of the industry here. I would like to make sure that Mr. Ruthenburg has covered the point to the satisfaction of everyone. I refer to your question as to whether or not you feel that under the Nema organization we will be self-governing. Has Mr. Ruthenburg answered that question?

DISCUSSION CLARIFIES STATUS OF COMMITTEE

MR. EVANS: I do not think he has answered the question as to whether the industry is to be under the control of the people who are engaged in it, because it is to be under the control of the Executive Committee of Nema.

MR. RUTHENBURG: Executive Committee of the *Refrigeration Division*. I perhaps did not make that clear.

MR. EVANS: Oh, I did not understand that. I thought it was the Executive Committee of the Nema.

MR. RUTHENBURG: There may be some confusion as to my use of the term "Executive Committee," because there are *two* executives committees involved. There is first the Governing Board of the Nema, on which this Refrigeration Division is ably represented. Second, there is the Executive Committee appointed by the Governing Board of Nema. That is the Executive Committee of Nema. This organization, the Refrigeration Division of Nema, has its own Executive Committee, which will be the administrative body as far as the refrigeration industry is concerned.

Now, we are controlled by the Nema Board of Governors within the scope of the general code adopted, which, as I have said, is drawn on the broadest and most general terms possible. Have I made that clear?

H. W. BURRITT: (Vice president, Kelvinator Corp., Detroit.) I think you ought to state that the Executive Committee of Nema also has a representative of this industry on it, as well as a representative on the Board of Governors of Nema.

MR. RUTHENBURG: I do not think that statement is exactly according to the fact. As I know the situation, this group does *not* have a member on the Executive Committee of Nema. We have, however, a member on the Code Committee of Nema which is now in session in Washington, which I think is much more to the point.

Each Member Company Has 1 Vote

MR. EVANS: May I ask one question, if Mr. Ruthenburg will report on that.

MR. RUTHENBURG: Yes.

CHAIRMAN JOHNSTON: Ask what you wish.

MR. EVANS: Any applicants for membership in this division of Nema, having been accepted into the division, how is the Executive Committee of this division elected, and on what basis is the new company admitted? Is there one vote for each company?

MR. RUTHENBURG: Each member company has one vote.

MEMBERSHIP IN NEMA AND BASIS OF DUES

CHAIRMAN JOHNSTON: I think it would be well if Mr. Ruthenburg would explain the method or the procedure to go through to obtain membership in Nema, and the basis of dues.

MR. RUTHENBURG: An application form is provided which has

(*Continued on Page 7, Column 1*)

All-Industry Conferees Relax After Harmonious Session in Detroit

Charley Gibson (left) buys a paper while Geoff Johnston sneaks in a look at the copy held by Kelvinator's "Doc" Harlan.

Tom Evans, fighting president of Merchant & Evans, assumes a characteristic pose for the camera to illustrate "words and gestures."

O. G. Lonskey (left) of Copeland accepts a red apple from J. A. Callahan of Briggs Mfg. Co. provided there are no strings attached.

Les Moffatt (left) editor, and Bill Beard, Cleveland representative of Electrical Merchandising, just before making a quick getaway.

(*Continued from Page 6, Column 5*)

printed on it the pertinent provisions of the constitution and by-laws as to membership. An application form can be obtained by anyone by writing to the Nema office. In filing that application, one gives the company name, the applicant's signature, business address, the date, and designates an executive representative and as many associate representatives as he can reasonably ask for. A charge is made for each executive and each associate representative in addition to the general dues. Then you list your classifications, as for example, "We are actively engaged in the manufacture and sale in the open market of *electric refrigerators*. We desire to be affiliated with the following section, etc." That is the classification according to the product.

Your application must be sponsored by two present members. Then it is referred to the Membership Committee. Upon approval by the Membership Committee, the election is held in the Board of Governors.

Now, as to the amount of dues, the annual dues of each member are as follows:

For each executive representative, $50.

For each associate executive representative, $25.

For each section with which a member is affiliated in excess of one, $25.

Dues Graduated According to Volume of Annual Sales

Additional dues are based on net annual sales, as follows:

Group 1, sales under $250,000, dues $70.

Group 2, $250,000 to $350,000, dues $100.

Group 3, $350,000 to $500,000, dues $150.

And so on. The scale is graduated. I could read this whole list if you want it, but it is graduated on an approximate percentage basis up to $400,000,000 sales. That basis of dues is simply a percentage basis on sales for the last fiscal year preceding application for membership. Does that answer your question?

MR. EVANS: Yes, sir.

CHAIRMAN JOHNSTON: Now, as we are considering whether or not this industry should go along under Nema, is there any doubt in the minds of other members of the industries represented here, on this point? I would like to bring out any thought that any of you might have as to whether or not we are sound in proceeding under Nema. As I said before, Mr. Ruthenburg has all the information here, but nothing has been definitely decided.

If it is the thought of this meeting that you are satisfied to go along under the present organization, it is only a matter of properly qualified companies making applications for membership. When these companies are accepted into membership, they are entitled to one vote, as are the other members.

The Executive Committee is nominated by the chairman and elected by the approval of the majority of the members. There are always methods of appealing any decision right up to the governing body of Nema. There is also the right of appeal to government officials who are in control of this Act.

Personally, I feel that if we attempted to withdraw from Nema, we would be very quickly put back in that group, or perhaps some other other group that we knew very little about. There are, I have heard it variously quoted, from 1,000 to 3,000 trade associations in this country. General Johnson has stated that the government will only contact with something less than 30; so we may as well accept it as a fact that we will be under the dominance of some general code. I think the members of this industry who have had experience under Nema, while, as I said before, they have criticized it at various times, are today feeling very happy and fortunate that we had an organization under their control.

But if there is any doubt (after all, we cannot decide much on the code today), what we want to decide today is whether we are going along on the proper road, and whether or not we should continue as we are. If there is any question or any doubt in any of your minds, I do hope that you will express it.

How Would Suppliers Be Represented in Nema?

MR. LINDSAY: Mr. Chairman, I hesitate to bob up so much, but I speak as a little brother of the rich, as a supplier. If the suppliers, or various parts manufacturers, form their organization, and then, as was suggested, might subsequently become a sort of subsidiary or sub-association to the Refrigeration Division, I am naturally interested in getting a little clearer idea as to the machinery in Nema, particularly with regard to the Refrigeration Division.

For example, are the members of the Refrigeration Division Executive Committee appointed by the Governors of Nema or is there anything in the nature of an election by the members of the association?

In other words, were the manufacturers other than electric refrigeration members not satisfied, or should they desire some particular man on that committee as representing their industry particularly well, would they have anything to say? If eventually the parts manufacturers are tied in (as I am inclined to think and hope they will be eventually)—would we have any control whatever of our direct representation in the Refrigeration Division? Perhaps some of the other men here are more familiar with it than I am. I am entirely hazy as to the machinery whereby the Refrigeration Division Executive Committee comes into existence.

MR. RUTHENBURG: I think I can answer the question in this way: Our Executive Committee in the Refrigeration Division of Nema is appointed by the Chairman subject to a ballot approval of a majority of the members. Now, in the tentative code that I have tried to outline here, it is provided that each product classification shall be governed by a supervisor or other form of supervising agency appointed by the Board of Governors of Nema. That becomes, I believe, in the case of the Refrigeration Division, a formality. In other words, we have an operating Executive Committee, and there is no reason to believe that the Board of Governors would appoint any other group. Does that answer your question?

MR. LINDSAY: Yes, they have the power and it can be exercised.

MR. RUTHENBURG: That is a matter of the code verbiage, but I could not conceive their doing anything except appointing our regular, duly elected committee.

CHAIRMAN JOHNSTON: In case such a thing should happen, we still have appeal to the Government, as any minority group has, as a member of this association. We are simply working under their general code.

KUEBLER ASKS ABOUT FIRMS MAKING SEVERAL LINES

C. A. KUEBLER: (President, Uniflow Mfg. Co., Erie, Pa.): Mr. Chairman, we manufacture other products besides electrical refrigerator products. I believe there are others here who make more than one line. We have been invited to three or four other meetings with reference to the other products, and we have been wondering where we will land, because we cannot be going to meetings all the time. We have got to land somewhere. Do you know anything about that?

CHAIRMAN JOHNSTON: There are a great many companies, including General Motors, Mr. Kuebler, that are affected in the same way. Where they will land is very doubtful.

It is not necessary that you should be active in each trade association. It is more the sense of the Act that you must be controlled by these different trade associations. I would imagine that the dominating product in your production would determine the trade association to which you would lend your efforts.

Problem as to How Conflicting Codes May Be Reconciled

MR. KUEBLER: There is one more question that I might ask along that line: Supposing we identify ourselves with what we might consider our major line. Would we in the other departments operate under codes that may be adopted by other ascociations under which those products might be classified?

CHAIRMAN JOHNSTON: As we understand it, you would be controlled in the marketing of your other products by the other codes.

QUESTION: How about your hours of labor or rates of pay, if there is a conflict there?

CHAIRMAN JOHNSTON: That is a very nice question, but unfortunately one that has not been answered yet by the Government, or any of the government officials, nor can you today get a direct answer on such question.

MR. BAPPLER: Mr. Chairman, do I understand the situation correctly when I assume that as a non-electrical manufacturer, we apply for membership in Nema and then when our membership is approved it is up to us to associate ourselves with kindred manufacturers in that group after we come in, or will that be taken care of by a governing body in the Refrigeration Division?

CHAIRMAN JOHNSTON: So far, the instructions given to manufacturers going to Washington and asking

(*Continued on Page 8, Column 1*)

Companies Represented in Conference

Following are the names of those who attended the conference:

Ansul Chemical Co.
Marinette, Wis.
H. V. Higley, secretary-treasurer

Baker Ice Machine Co.
1518 Evans St., Omaha, Nebr.
J. M. Fernald, general manager

E. L. Barnes
168 Cresent Ave., Buffalo, N. Y.

Briggs Mfg. Co.
3100 Meldrum Ave., Detroit, Mich.
J. A. Callahan

Bush Mfg. Co.
100 Wellington St., Hartford, Conn.
J. W. Hatch, general manager
C. T. Bappler, sales manager

Celotex Co.
919 N. Michigan Ave., Chicago, Ill.
J. H. Bracken, general manager

Copeland Sales Co.
332 Cass Ave., Mt. Clemens, Mich.
O. G. Lonskey

Crosley Radio Corp.
Arlington St., Cincinnati, Ohio
Lewis M. Crosley, vice pres. & gen. mgr.

Detroit Lubricator Co.
5842 Trumbull Ave., Detroit, Mich.
J. W. Baillie, vice president
D. Black

Dry-Zero Corp.
3345 Merchandise Mart, Chicago, Ill.
H. B. Lindsay, president

Electrical Merchandising
330 W. 42nd St., New York, N. Y.
Lester Moffatt, editor
William K. Beard, Jr.

Electro Devices Co.
73 Tremont St., Boston, Mass.
Fred A. Cornell, manager
(537 East Delavan Ave., Buffalo, N. Y.)

Electric Refrigeration News
550 Maccabees Bldg., Detroit, Mich.
F. M. Cockrell, publisher
George F. Taubeneck, editor
H. W. Mateer, advertising manager
John T. Schaefer, engineering editor
John R. Adams, managing editor
P. B. Redeker, assistant editor
Elston D. Herron, assistant editor

Erie Art Metal Co.
Erie, Pa.
A. F. Schabacker

Fedders Mfg. Co.
57 Tonawanda St., Buffalo, N. Y.
H. E. Rieckelman, asst. to president

Frigidaire Corp.
(Subsidiary of General Motors Corp.)
Dayton, Ohio
W. F. Armstrong, assistant to president

General Electric Co.
Specialty Appliance Sales Dept.
Nela Park, Cleveland, Ohio
P. B. Zimmerman, manager
Mr. Chapman
T. K. Quinn, vice president
(120 Broadway, New York City, N. Y.)

Gibson Electric Refrigerator Co.
Greenville, Mich.
Chas. J. Gibson, president
A. B. Cheetham

Grigsby-Grunow Co.
5801 Dickens Ave., Chicago, Ill.
Le Roi Williams, vice pres. & gen. mgr.

Gurney Refrigerator Co.
66 S. Brooke St., Fond du Lac, Wis.
E. G. Vail, president

Heinz & Munschauer
Buffalo, N. Y.
E. A. Munschauer, president

C. J. Hepburn (attorney)
1500 Walnut St., Philadelphia, Pa.

Ilg Electric Ventilating Co.
2850 N. Crawford Ave., Chicago, Ill.
J. J. Huncove, Detroit representative

Kelvinator Corp.
Leonard Refrigerator Co.
14256 Plymouth Road, Detroit, Mich.
H. W. Burritt, vice pres. in charge of sales
H. G. Perkins, asst. to the president
J. A. Harlan, commercial sales manager

Larkin Refrigerating Corp.
Box 1699, Atlanta, Ga.
Lester U. Larkin, vice president

McCord Radiator & Mfg. Co.
2585 East Grand Blvd., Detroit, Mich.
J. H. Cooper, asst. to the president
Morrill Dunn, vice president

McCray Refrigerator Sales Corp.
Kendallville, Ind.
E. E. McCray, president
H. M. Stewart, vice president

Merchant & Evans Co.
21st & Washington, Philadelphia, Pa.
Thomas Evans, president

Glenn Muffly
535 Fifth Ave., New York, N. Y.

Mullins Mfg. Co.
Salem, Ohio
R. F. White, executive vice president

National Elec. Mfrs. Association.
155 East 44th St., New York City, N. Y.
Refrigeration Division
Louis Ruthenburg, consultant
(2638 Book Tower, Detroit, Mich.)
J. W. Beckman, publicity

Norge Corp.
(Division of Borg-Warner Corp.)
670 E. Woodbridge St., Detroit, Mich.
Howard Blood, president

Palmer Electric Co.
1258 Times Square, Detroit, Mich.
B. W. Palmer, president

Peerless Ice Machine Co.
515 West 35th St., Chicago, Ill.
R. W. Kritzer, vice president

Refrigerating Machinery Association
305 Park Bldg., Philadelphia, Pa.
Fred Nolde, secretary

Retailing Magazine
Household Furnishings Edition
New York City
C. E. Schaffner

Rex Mfg. Co.
Western Ave., Connersville, Ind.
C. C. Hull, president
G. W. Anstead, secretary-treasurer

Riley Engineering Corp.
642 Beaubien St., Detroit, Mich.
F. B. Riley, general manager

Sanitary Refrigerator Co.
Fond du Lac, Wis.
Wm. Mauthe, president

Sears Roebuck & Co.
Arthington & Homan Aves., Chicago, Ill.
E. Gudeman, buyer, refrigeration dept.

Seeger Refrigerator Co.
St. Paul, Minn.
Walter Seeger, vice president

Servel Sales, Inc.
(Subsidiary of Servel, Inc.)
Evansville, Ind.
F. E. Sellman, vice pres. in charge of sales
(51 East 42nd St., New York, N. Y.)

Sparks-Withington Co.
Michigan Ave. at Horton St., Jackson, Mich.
W. J. Corbett
H. M. Johnston, treasurer

Standard Refrig. Co.
110 S. Brook St., Fond du Lac, Wis.
Wm. Mauthe, president

Stevenson, Jordan & Harrison
19 W. 44th St., New York, N. Y.
De Forest Manice

Stewart-Warner Corp.
1826 Diversey Parkway, Chicago, Ill.
Chas. R. D'Olive, mgr. refrigeration dept.

Sunbeam Electric Mfg. Co.
225 West Morgan Ave., Evansville, Ind.
W. A. Carson, president
G. E. Humphrey

Tricold Refrigerator Corp.
220 Delaware Ave., Buffalo, N. Y.
T. Irving Potter, president
Irving R. Halsey

Trupar Mfg. Co.
140 Davis Ave., Dayton, Ohio
H. J. Hunt, pres. & gen. mgr.

Truscon Steel Co.
6100 Truscon Ave., Cleveland, Ohio
H. Woodhead, general manager

Uniflow Mfg. Co.
1525 E. Lake Road, Erie, Pa.
C. A. Kuebler, president
M. A. Martin, vice pres. & gen. sales mgr.

Universal Cooler Corp.
7424 Melville Ave., Detroit, Mich.
G. M. Johnston, president

U. S. Radio & Television Corp.
3301 S. Adams St., Marion, Ind.
T. C. Whitehead

Westinghouse Electric & Mfg. Co.
Refrigeration Div., Mansfield, Ohio
R. E. Imhoff, sales mgr., merch. dept.
R. C. Cosgrove, mgr. refrigeration sales

Wood Conversion Co.
360 N. Michigan Ave., Chicago, Ill.
Chas. M. Lee

Rudolph Wurlitzer Corp.
N. Tonawanda, N. Y.
Walter Wendell, vice president

Zerozone, Inc.
205 E. 42nd St., New York, N. Y.
Arthur H. Richland, president

HERE'S THE DOOR TO GREATER PROFITS

The SHELVADOR

U. S. PATENT 1898922

Here is the most sensational selling feature ever thought of in ELECTRIC REFRIGERATION . . . the most sensational advance in cabinet design since the first icebox was brought out . . . a feature so self-evident, so new, so convenient and helpful that every housewife after one glance will say: "*That's what I must have!*"

This new and exclusive patented feature is the most sweeping victory in the field of electric refrigerator sales

The Shelvador doesn't need explaining. One glance and the story is told. What a show-room and show-window feature! With the Shelvador you're a mile ahead of competition. You have something every housewife wants in her new electric refrigerator or is sorry she hasn't in her present one.

Increases "Usable" Capacity 50%

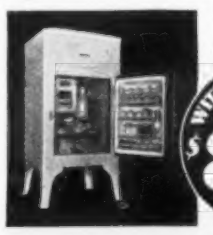
Shelvador actually makes the "small" refrigerator "larger" by increasing the "usable" space. It saves the annoyance of "feeling around" for small, hard-to-find objects . . . puts them where they are easily reached.

Only Crosley Offers It

And remember—only the Crosley Electric Refrigerator can use the Shelvador; for it is an exclusive, patented Crosley feature. Insulation is not sacrificed in the Shelvador—the exterior of the door is extended to permit the use of a standard thickness of insulation.

In addition to the Shelvador, the Crosley Electric Refrigerator—famous last year for its trouble-free, service-free operation, has been refined in several points to make it even better. See your nearest Crosley distributor or write direct to factory.

MODEL D-35 NET contents — 3½ cubic feet. Shelf area—8 square feet. Overall Dimensions: Height, 50⅝"; Width, 23⅞"; Depth, 24"; Leg Height, 10⅞" No. ice trays, 2; No. ice cubes, 42.

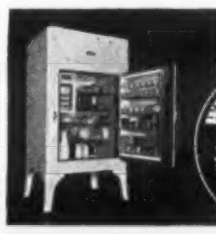


WITH SHELVADOR $89.50

MODEL D-45 NET contents — 4½ cubic feet. Shelf area—10.6 square feet. Overall Dimensions: Height, 56⅞"; Width, 23⅞"; Depth, 24"; Leg Height, 10⅞" No. ice trays, 3; No. ice cubes, 63.

WITH SHELVADOR $99.50

MODEL D-60 NET contents—6 cubic feet. Shelf area—11.5 square feet. Overall Dimensions: Height, 57½"; Width, 29½"; Depth, 25¾"; Leg Height, 10⅞"; No. ice trays, 3; No. ice cubes, 63.



WITH SHELVADOR $130

ALL PRICES INCLUDE DELIVERY..INSTALLATION..ONE YEAR FREE SERVICE

Montana, Wyoming, Colorado, New Mexico and west, prices slightly higher.

The Crosley Radio Corporation - Cincinnati
POWEL CROSLEY, Jr., *President.* Home of "*the Nation's Station*"—WLW

CROSLEY Electric REFRIGERATOR WITH SHELVADOR

U. S. PATENT 1898922

(*Continued from Page 7, Column 5*)

that question have been for that manufacturer to go home and arrange with the people in the same industry, to organize themselves into a trade association, and seek the proper general code under which they should operate. So far there has been very little help or explanation given to those particular problems.

In your particular case, coil manufacturers, it would seem that you would have to organize and affiliate with whatever established organization there was. It seems only reasonable that manufacturers of all products that are related to mechanical refrigeration should come under the general code that the Refrigeration Division of Nema comes under. The idea and expectation is that the by-laws of Nema will be so extended that non-electrical groups will be allowed to come under their general code.

MR. RUTHENBURG: Another question came up as I passed across the floor here. One man said that he believed that a good many people here did not know as much as we have assumed they knew about Nema, about its origin, its present constitution, as regards membership and sections, and as to the machinery by which the Refrigeration Division is run.

Is that a general feeling here?

SEVERAL VOICES: Yes—I don't know.

MR. RUTHENBURG: All right, now, I am going to explain it; and you must bear with me, because due to my long contact with Nema I naturally assume it is clearer to you than it is. When I finish, please ask any particular question that pops into your mind, so as to get that one question out of the way.

Now, Nema, according to my information as to its background, is the consolidation of a number of older trade associations in the electrical manufacturing business, and represents now approximately 260 electrical manufacturers in various lines. These men are divided according to product classification into a number of groups.

VOICE: How many groups, approximately?

Product Classifications Now Organized in Nema

MR. RUTHENBURG: I will read the group classifications. I think that will answer your question. These are the product classification groups of Nema:

Armored conductor and flexible metallic conduit section.
Carbon section.
Electric measuring instrument section.
Electrical porcelain and high voltage insulator sections:
- High voltage insulator.
- Porcelain.

Electric welding section.
Fan motor section.
Industrial control section.
Insulating materials sections:
- Laminated phenolic products.
- Manufactured electrical mica.
- Vulcanized fibre.

Lighting sections:
- Flood lighting.
- Industrial lighting.
- Street lighting.

Mining and industrial locomotive section.
Molded insulation section.
Motor and generator section.
Non-metallic conduit and non-metallic sheathed cable sections.
Outlet, switch box, and conduit fittings section.
Overhead trolley line materials section.
Panelboard and distribution board section.
Pole line hardware section.
Range and appliance sections:
- Counter appliance.
- Electric range.
- Electric water heating.
- Heating appliance.

Refrigeration section.
Resistance type furnace section.
Rigid conduit section.
Surface raceway section.
Switch gear section.
Transformer section.
Underfloor duct section.
Wire and cable section.
Wiring devices sections:
- Attachment plug.
- Fuse.
- Knife and enclosed switch.
- Lamp receptacle and socket.
- Small air circuit breaker.
- Snap switch.

Refrigeration Division of Nema Is Self Governing

The Refrigeration Division represents a very large proportion of the total business volume of Nema in their membership. I should say—this is very rough, and please do not hold me to these figures—my impression is that it has ranged from 10 to approximately 25 per cent, increasing, of course, rather rapidly since 1929, because refrigeration has held up and the other lines have gone down.

Now, this is the first time that I have read the names of these sections, although I have been associated with Nema for almost four years; because this group, of course, has no actual contact with those sections except as their representative meets with the Board of Governors. Each of those groups is separate and autonomous. The Refrigeration Division of Nema elects a chairman, the chairman appoints such committees as may be required to effectuate the business of the division. It is an extremely simple and effective type of organization, with as little formality as possible.

Now, the long contact I have had with this organization has indicated that the Refrigeration Division has been in fact entirely self-governing. We, as a matter of common sense, submit our minutes to the general counsel of Nema for a review. If we did not submit them to him, we would certainly submit them to another attorney; and it would be very difficult to find one as competent in this particular field as Judge Neagel.

Again I ask you, is there any question that I have not answered to your satisfaction?

QUESTION: What are the subdivisions of the Refrigeration Section of N. E. M. A.?

MR. RUTHENBURG: There is none at present.

RICHLAND SPOTLIGHTS PECULIAR NEMA RULE

MR. ARTHUR H. RICHLAND (President Zerozone, Inc., New York City): Mr. Ruthenburg, I am not quite clear on that last point just mentioned. This chairman is elected by the members. Assuming that all these people here became members, we would elect the chairman of this committee which will enforce the code.

MR. RUTHENBURG: You would elect the chairman of the Refrigeration Division, and he in turn would appoint an Executive Committee, of which he is a member, to assist him, subject to the approval again of the majority of the group.

MR. RICHLAND: Didn't you say before—I am not catechising you now, I am just trying to check myself up—didn't you say before that the Board of Governors appointed that chairman?

MR. RUTHENBURG: That is provided in the code. We have our own method of electing our Executive Committee. The code is something new, you see, and provides that the Governing Board shall appoint our supervising body. As a matter of practice, I said what I thought would happen—and it would be absurd to assume anything else—namely, that our board as now constituted would be appointed by the Board of Governors to comply with the provisions of the code.

Have I made that clear?

MR. RICHLAND: Not entirely. I do not see why there should be that device. Why not have the chairman elected by the members of the Refrigeration Division?

MR. RUTHENBURG: He is.

MR. RICHLAND: Actually?

MR. RUTHENBURG: He is actually.

CHAIRMAN JOHNSTON: In general meeting.

MR. RICHLAND: I do not understand the other provision of the code, then. Is he now, and is that going to be changed in this new code?

MR. RUTHENBURG: No.

MR. RICHLAND: I confess that is over my head. I do not get the distinction.

MR. RUTHENBURG: It is a complication that you always get into when one organization is superimposed on another. We elect our chairman and always have within our own group, subject to a formal approval of our Board of Governors. Our election has never been questioned. We also have certain rules within our group under which we elect the appointees of our chairman as our Executive Committee.

That is clear up to there, is it not?

MR. RICHLAND: Yes.

MR. RUTHENBURG: Now, the next step is, we are formulating a code, and in that code at the moment it is provided that the Board of Governors of Nema shall appoint a supervisor or other supervising agency for each section.

MR. RICHLAND: Independent of the Executive Committee or to work with it, is that it?

MR. RUTHENBURG: No, that will be our Executive Committee unless the unexpected should happen, and I cannot imagine that they should raise any objection to our nomination. It has not ever happened in the four years we have been operating here.

MR. RICHLAND: In other words, they have the veto power if they care to use it?

MR. RUTHENBURG: Yes, but why should they do otherwise than simply confirm our election?

MR. RICHLAND: As somebody is saying here, then why is that provision in there?

MR. RUTHENBURG: Largely because the government wants to be sure that there is a continual line of authority between the government and the last fellow in line.

How Far May Executive Committee Determine Rules of Fair Competition?

MR. RICHLAND: I think the two important points are the one we just discussed, which is the representation that each member actually will have in the governing body, and secondly, what that body may do and what its powers are.

As I understand it, this code at present consists of three main points, but the synopsis of the code had the words in it "fair competition." The three points covered I don't imagine will appeal to anyone as being in any way new. We have all come here expecting that hours of labor, minimum wages, and the provision as to selling below cost would be included. I am not surprised at any of those three, but when the words "fair competition" are included, they imply that possibly now or later there might be a possibility of a flexible provision in the code permitting this committee to fix prices and control production, as one of the gentlemen here has suggested should be done, a viewpoint with which I personally am not in agreement.

Has this committee that right as the code is now constituted? Will it have the right at any future time as far as the code at present is constituted?

MR. RUTHENBURG: The present code requires that the supervising body, which would in this case be our own division Executive Committee, has power to act within the provisions of the code. In other words, that is their limitation.

Has the Committee Power to Fix Prices and Limit Production?

MR. RICHLAND: As this code has been read rather hurriedly, has it any provision—any loophole, let us put it that way—wherein the committee has the power to fix prices or limit production?

MR. RUTHENBURG: No, that is in the future; that is in the making. As I said early in my remarks, there is a provision which permits each product division, such as the Refrigeration Division, to draw its supplementary code to govern factors peculiar to that industry or that branch of the industry. That has not been drawn, and cannot be drawn very well until the master code has been approved.

Now, when we formulate that supplementary code, we can at that time define a great many things as to how we are to be governed, and what the scope of the Executive Committee shall be. That is in the future and is in the making.

MR. RICHLAND: As I understand it, however, the government does not ask or expect us to go that far. I mean, is that entirely within our own judgment?

MR. RUTHENBURG: At present that is my understanding, yes.

MR. RICHLAND: But if it were to get to that point, it would require a majority of votes of the members of that division?

MR. RUTHENBURG: The thinking that has been expressed in our group is that the actions of the Executive Committee shall be subject to control of a majority vote, except insofar as they are bound by the general code or by such special code as we might adopt.

MR. RICHLAND: In other words, to make an amendment to the code.

MR. RUTHENBURG: Let us suppose, for example, that we as a group are trying to formulate some type of supplementary code that deals with commercial problems or commercial practices. It is the thinking of this group that such a code can be adopted within our section, within our division, only upon approval by a majority, you see, and is then enforcible by the Executive Committee or their duly appointed officials.

MR. RICHLAND: That is good.

MR. RUTHENBURG: Have I completely answered your question?

MR. RICHLAND: Yes, thank you.

MR. EVANS: If any organization under the conditions as you have outlined applies for membership in the Nema Refrigeration Division, can they become members and take part in the negotiation of this sub-code? How long will that take?

MR. RUTHENBURG: I should think that that would be quite possible, because we have the negotiations of this master code, which may take some time, and we cannot do more than simply discuss the supplementary code. I see no reason why any application received should not be put through very expeditiously.

Thomas Evans Expresses Confidence In Nema Organization

MR. EVANS: I should think it would be a very great advantage to have a representative number from the industry; and I want to say this: That from my own organization, I feel so confident in the position you have outlined here that my company shall apply for membership under those conditions.

MR. M. A. MARTIN (Sales manager, Uniflow Mfg. Co., Erie, Pa.): How long is it likely to be before this major code will be formulated and ready for operations to start under that code?

MR. RUTHENBURG: Mr. Martin, I think your guess or anybody else's here is just as good as mine. The steps that have to be taken will naturally take some time, and I cannot conceive of a code being ready in less than 30 days, and it may be some time beyond that.

MR. LESTER U. LARKIN (Vice president, Larkin Refrigerating Corp., Atlanta, Ga.): Mr. Chairman, the answer to this might be only an assumption, but I have been a little bit worried about it. Supposing that we were accepted as members of Nema and sub-codes were developed. We will take as an illustration, the coil industry or a possible coil division of the Refrigeration Division of Nema, and that a code was adopted and accepted for it. Now, would those manufacturers which are members of Nema manufacturing not only coils but also manufacturing cabinets and other parts, be compelled to live under the coil code that was adopted as a part of a subdivision of a subdivision?

MR. RUTHENBURG: That is too deep for me.

CARSON OBJECTS TO CODE CHANGES WITHOUT VOTE

MR. W. A. CARSON (President, Sunbeam Electric Mfg. Co., Evansville, Ind.): I think the important part of this suggested code is the question of the selection of the Executive Committee. As Mr. Evans brought out in his remarks, the question is, how is the small manufacturer going to fare in this combined industry. I think that is essential under the law.

Now, as I understand it, the selection of the chairman is made by the full membership of the division. He in turn elects or appoints the members of the Executive Committee, I suppose, from the industry. Then that is subject to approval by the full membership.

I did not get your point about the position of the parent Nema organization. Does it then have the right to approve or reject that Executive Committee, and if it has no authority to select another Executive Committee, does it pass the election back to the division to submit a new Executive Committee?

MR. RUTHENBURG: No, it has the right to appoint an Executive Committee, but as a matter of practice they never have and I cannot see any reason why they ever should, re-

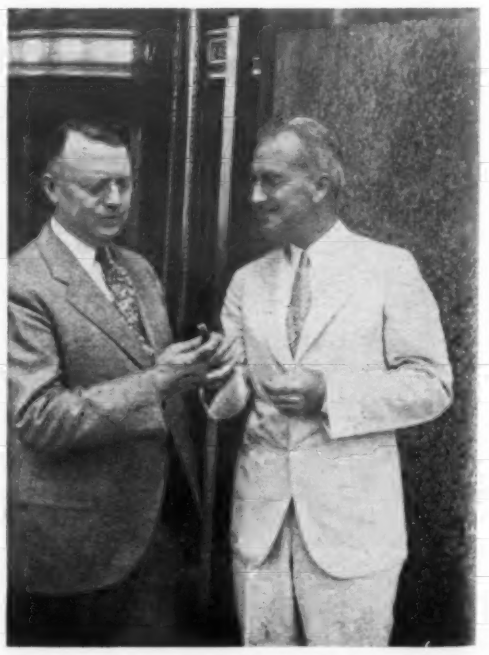
(*Continued on Page 9, Column 1*)

Weatherman Favors Visitors by Providing Comfortable Temperature

Walter Seeger (right) tells a funny one to the amusement of Lester U. Larkin (left) and Harry Hunt, president of Trupar.

Dry-Zero's Harvey B. Lindsay is cornered and forced to tell all by Assistant Editor Phil Redeker of Electric Refrigeration News.

C. C. Hull, president of Rex Mfg. Co., was stranded at the door but is apparently being rescued by one of "Detroit's best."



Frank Riley (left) of Riley Engineering Co. seems a bit skeptical about the cigar proferred him by "Handsome" Jack Fernald of Baker.

(*Continued from Page 8, Column 5*)

ject a suggestion made by this self-contained division.

MR. CARSON: The theory of the law, as I understand it, is that industry should first be allowed to govern itself. Now, if we are going to let the Board of Governors of Nema select our Executive Committee, which has full authority over this division, then the intent of the law is not being followed. I think the question of getting the cooperation of the full membership, and its regulation, is a question of the status and powers of the Executive Committee.

The original code, as I understand from your remarks, is approved by the majority of the division, but you further said that the Executive Committee would have the right to change the code. Now, if we pass on the code, which then becomes the law, certainly we should not, if the industry is going to govern itself, let the Executive Committee change the code, because we have no voice then, and we might as well have let them fix the original code.

MR. EVANS: But any changes they make in the code must be approved by the membership.

MR. CARSON: Mr. Ruthenburg did not say that. The point is, they have no authority to change it.

MR. RUTHENBURG: The code as it is now written gives the Governing Board a right to make changes in the code. The governing board is a self-contained body.

MR. CARSON: Without submitting it to the membership?

MR. RUTHENBURG: Without submitting it to the membership; and in fact, this code has never at any time been submitted to the membership of Nema.

MR. CARSON: I am talking now about a division, the code of the Refrigeration Division.

Refrigeration Code to be Submitted To Membership

MR. RUTHENBURG: The code of the Refrigeration Division, according to our present discussions, will be drawn up subject to the approval of the majority of the Refrigeration Division. You are right on that.

MR. CARSON: But then the Executive Committee of the Refrigeration Division will have the right to change it at any time it sees fit.

MR. RUTHENBURG: No.

CHAIRMAN JOHNSTON: Not without the approval of the majority of all members.

MR. CARSON: Would the Executive Committee of Nema have the right to change the code?

MR. RUTHENBURG: The general code, yes.

MR. EVANS: But not the sub-code?

MR. RUTHENBURG: Not unless it conflicted with the general code.

MR. CARSON: Well, the sub-code is only a part of the general code. That is the problem. Now, if you are going to have this industry govern itself, certainly it must have a right to vote on any changes that affect its welfare.

Now, as I understand it (and I read it in one of the trade papers), when a problem comes up affecting the industry, the present advisory board of General Johnson, representing industry, has no voice in the consideration of the matter at all.

Now, the question here, and I have had some experience with the early formation of the Interstate Commerce Commission and the Railway Commission, is one of regulating the new organization. As I take it, this is virtually along the same line, only a much bigger problem. The question of getting the cooperation of industry in protecting the little fellow is a matter of giving him a voice in formulating the rules, administering them, and providing a method of appeal.

Now, if this administration advisory committee of General Johnson's has no authority to vote on matters pertaining to its own industry, and we appoint an Executive Committee here of our competitors, giving them a right to confidential information as to our business, and in determining policies, no matter how honest a man might be, we are all a little selfish, and a man is bound to be prejudiced in his action.

Objects to Delegation of Broad Powers to Committee

There must be the right of appeal, which I take it would be first to the Nema Executive Committee, and then probably to the local district court or to General Johnson's administration. But I would like to register a vigorous protest against either the Executive Committee of the Refrigeration Division, or the Executive Committee of Nema, having the right to change this code without submitting their recommendations back to the full membership for a majority vote. I do not think it will ever work if we are going to have laws made by our competitors without having a voice in the decision.

CHAIRMAN JOHNSTON: As I understand it, you are not having laws made by your competitors without having a voice. Your Refrigeration Division of Nema elects an Executive Committee, which committee may make changes or recommend changes in the code affecting competitors. That is the Refrigeration Division. That Executive Committee can recommend changes in the code, and these changes come back to a full meeting of that group—the ones directly interested.

Now, if the majority approves or disapproves of that change in the code, all members have a right to vote on it and such change is only in the code that affects the immediate industry, and it then goes to your Executive Committee of Nema. This group deals only with the government on the general code, and providing these proposed changes do not affect the general code, which the government has executed, they are put into force and become a law. But no competitor in any one industry or no group can make a change in the code affecting that industry without the approval of a majority of their membership.

MR. CARSON: In this formulating a general code of Nema, various groups are submitting codes pertaining to their groups, and from them a general code will be adopted, is that it?

MR. RUTHENBURG: No.

MR. CARSON: Are we proposing a code for the Refrigeration Division which will be incorporated in a general code by Nema?

MR. RUTHENBURG: That will come later and be a supplementary code. The general code is now in the hands of the Board of Governors of Nema and has been from its inception.

MR. CARSON: Well, what is the object of this meeting? Are we to agree on a supplementary code that will be made a part of the general code?

MR. RUTHENBURG: Not in this meeting. I do not think we can do that with any intelligence. We will have to know more about the terms of the general code.

MR. CARSON: Is the purpose of this meeting to secure a voice in the general code when it is submitted?

CHAIRMAN JOHNSTON: The object of this meeting is to familiarize all members of this particular industry with the information that we have before us at this time, to decide whether we should go along under Nema, and the procedure. The formulation of the code and the final code that will be passed *must come back* to the membership of this group.

MR. CARSON: I agree with that heartily.

CHAIRMAN JOHNSTON: We cannot deal with detail on the code, because the machinery is not set up for it. We do know that it would be a very nice condition if this particular industry could go directly to the Government with its code, but we have found this to be impossible.

When we first approached this problem we felt that we could and would deal directly with the Government. But we know very definitely now that we must deal through some other group under a general code. However, as far as our own industry is affected we are to be entirely self-governing, with the controlling body ahead of us. If that controlling body interferes to the injury of our particular industry, we have the appeal to General Johnson's department.

MR. CARSON: That would mean with reference to a proposed change in the code?

CHAIRMAN JOHNSTON: To a proposed change in the code, or to the original code as submitted.

MR. CARSON: I heartily approve of the idea of continuing with Nema. I think it is an organization that should be followed and continued. The only question that I brought up was the question of having the industry control itself. I think that is the secret of the whole problem, along with the right of appeal.

The only point that I raised was whether the Executive Committee, not being familiar with the conditions of any particular division, might change the code to the injury of the division, but if members of the industry have the right to appeal to General Johnson, that is all right. As I got it, any member violating it could be expelled from the organization.

CHAIRMAN JOHNSTON: General Johnson has very definitely informed us that the penalties will not be enforced to start with.

QUINN POINTS TO VOTING PRIVILEGE OF MEMBERS

MR. T. K. QUINN (Vice president, General Electric Co., New York City): The direct answer to this gentleman's question is that, of course, every member of Nema clear on down the line has a right to a voice in the preparation of these codes or anything else. Now, it happens just as a matter of time, that the Nema group met sometime ago, and the membership had presented to them by a committee a proposed code which required, among other things, that for the purposes of practical administration, certain authority be voted by the group to the Board of Governors, which was done. So, if you please, they did have a representation at that time.

Now, this thing is moving on pretty fast, but I understand clear on through the whole Nema organization and all of its sections or divisions, the spirit of representation is very carefully preserved. We are watching to see that every manufacturer, every member, does have a vote. So it seems to me the direct answer is that you have had a vote if you were a member, but of course, if you were not a member of Nema and the parade has moved up to this point, you will have to catch on from this point and become a member and go on from here. But the direct answer is, yes, you do have a voice. Of course, had you been a member and taken part in whatever has been done so far, you have had a voice, and you will have a voice from the moment you become a member equal to any other voice in the whole organization.

Then may I say one other thing. This Board of Governors of Nema is not a mysterious absentee group at all. There is nothing in the world that would prevent any member of Nema here from being a member of the Board of Governors, if he is elected to that office. It is not something in which we are not represented. There again, once a year an election is held, and any member is eligible to become a member of the Board.

I want to make the point very clear, because I think I understand what this gentleman has in mind. We are self-governing, we all do have a voice, and if we have not a voice in what has been done so far, it is only because we were not there when it was done.

MR. CARSON: I would like to say that I approve heartily of everything that has been done. My only point in raising a question was about Mr. Ruthenburg's explanation of the proposed code, from which I took it that the Executive Committee of the Refrigeration Division and the Executive Committee of Nema would have the right to change the code without submitting it to the membership. Now that is cleared up, and it is perfectly all right.

KRITZER SUGGESTS SUB-DIVISION FOR PARTS MANUFACTURERS

MR. KRITZER: If you are trying to get all the members of the refrigeration industry in this, and there will be a large number of parts manufacturers, it seems to me that the parts manufacturers should come in under a subdivision of this Refrigeration Division of Nema with representation on this Executive Committee, separate and specified representation.

In other words, if all of us, including the parts manufacturers, join Nema, we have certain problems, certain things that we want to make sure of in the administration of this supplementary code. The only way we can make sure of that participation is by securing representation on this Executive Committee as a parts subdivision.

Now, I do not know on what basis you are going to take in the other members, the manufacturers who do not use electricity in their product, but it seems to me that if they are taken in they should be taken in as a subdivision, with representation on the Executive Committee which will interpret the supplementary code and which might possibly pass something to their detriment if they are not represented on it.

CHAIRMAN JOHNSTON: Previous discussions have dealt with providing machinery for the parts manufacturers to organize; they will be also self-governing. That is, there can be no interference by the Refrigeration Division of Nema as at present constituted; but the parts manufacturers would again be a self-governing group and a voting group as to the senior officers of Nema—that is, the Board of Governors, and the President. But the parts manufacturers in turn would be entirely self-governing and, except in cooperation and for the development of the industry, would work with the Refrigeration Division. But as far as any control would be developed, I doubt if there would be any more connection than there would be between the Refrigeration Division and the Switch Division, about whom we do not know a thing. They might as well be in some other trade association.

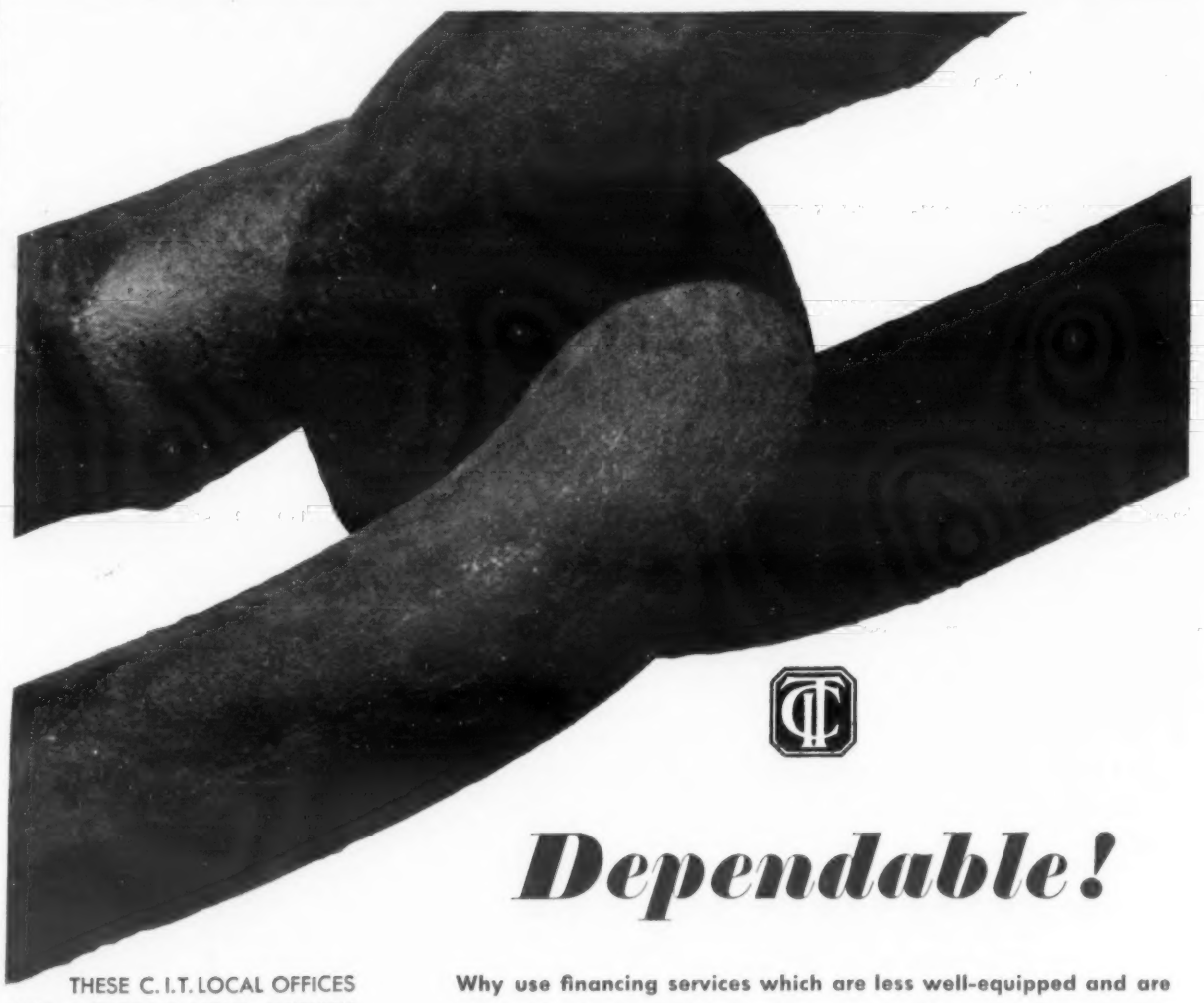
But I think what will develop, if the parts manufacturers organize, and whether or not they come under Nema, is that there will have to be a certain amount of cooperation in the operation of the two organizations. I think that the compressor section of the refrigeration industry would welcome close association with the parts manufacturer, and I cannot see how the government could allow anything but very close classification, because it is all really dealing with the one subject. We still have Mr. Nolde's association of high pressure manufacturers. Now, wherever we are all going in the final analysis we do feel that we are set properly under Nema for the Refrigeration Division. Now, where all of refrigeration will be finally grouped, we cannot prophesy very well at this time.

MR. KRITZER: You mentioned some of those other subdivisions. Just what is their set-up in relation to the division?

CHAIRMAN JOHNSTON: To our division?

MR. KRITZER: No, you mentioned some subdivisions of divisions: Do they have a voice in the division, do they elect a representative to the division itself, as a subdivision of a divi-

(*Concluded on Page 10, Column 1*)



Dependable!

THESE C. I. T. LOCAL OFFICES WILL WELCOME YOUR INQUIRY

Akron – Albany – Altoona – Amarillo
Asheville – Atlanta – Augusta – Baltimore
Bay Shore – Beaumont – Beckley
Binghamton – Birmingham – Boston
Bridgeport – Bronx – Brooklyn – Buffalo
Camden – Charleston – Charlotte – Chicago
Cincinnati–Clarksburg–Cleveland–Columbia
Columbus – Dallas – Dayton – Denver
Des Moines – Detroit – El Paso – Erie – Fort Wayne – Fort Worth – Fresno – Glens Falls
Greensboro – Greenville – Hagerstown
Harrisburg–Hartford–Hempstead–Houston
Huntington – Indianapolis – Jacksonville
Jamaica – Jamestown – Jersey City – Johnson City – Kansas City – Knoxville – Lexington
Lincoln – Little Rock – Los Angeles
Louisville – Manchester – Memphis – Miami
Milwaukee – Minneapolis – Montgomery
Montpelier–Mt. Vernon–Nashville–Newark
New Haven – New Orleans – New York
Norfolk–Oklahoma City–Omaha–Orlando
Paterson – Peoria – Perth Amboy
Philadelphia – Pittsburgh – Portland, Me.
Portland, Ore. – Poughkeepsie – Providence
Raleigh – Reading – Reno – Richmond
Roanoke – Rochester – Sacramento
St. George – St. Louis – Salt Lake City – San Antonio – San Diego – San Francisco
San Jose – Scranton – Seattle – Spokane
Springfield – Stockton – Syracuse – Tampa
Toledo – Tucson – Tulsa – Utica – Washington
Watertown – Wheeling – White Plains
Wichita – Wilkes-Barre – Youngstown.

Why use financing services which are less well-equipped and are backed by less experience when you can have C. I. T. Service on an equal or better basis? Our reputation rests not on claims but on a record of *results* that can be traced over a period of twenty-five years.

Our Refrigerator Financing Plans are complete—not just in theory but complete in actual field operation through C. I. T.'s unique system of fully functioning Local Offices throughout the country. In the C. I. T. office near you, near your customers, you will find skilled finance men to check purchase credits, buy paper, make collections and effectively relieve you of all credit sales burden. Our rates are uniformly low.

C. I. T. Plans cover approved types of mechanical refrigerators and water coolers; also electric ranges and air conditioning equipment. Phone today the nearest C. I. T. office.

C.I.T. CORPORATION

NEW YORK — CHICAGO — SAN FRANCISCO

Completely Functioning Local Finance Offices in the Principal Cities

A Unit of COMMERCIAL INVESTMENT TRUST CORPORATION—CAPITAL AND SURPLUS OVER $70,000,000

(*Concluded from Page 9, Column 5*)

sion?

MR. RUTHENBURG: I think the machinery is set up for the principal section, and then these groups are more or less subcommittees under that general section. I am not entirely clear on that, but that is my opinion.

CHAIRMAN JOHNSTON: That a subdivision is really a committee. Mr. Howard Blood.

BLOOD EXPRESSES DESIRE FOR SELF GOVERNMENT

MR. HOWARD BLOOD (President, Norge Corp., Detroit): I am very much interested in this matter of self-government of the refrigerator industry within Nema. I know some of the other companies, not only small companies, have also been very much interested in the self-government of the refrigerator section.

I think that the way the code is drawn up and the way that amendments to the code may be made, looked at purely from a technical or legal standpoint, seem to provide a means whereby a small group of men could adopt regulations that would become law and could govern the industry without the industry having the proper voice. But I have become convinced that so far as I am concerned, there is nothing to fear in that situation.

I sat in on a couple of meetings with the Board of Governors just to clear my mind on that point a couple of weeks ago, and I listened to our friend George Mason question the Board of Governors directly on that point, and the answer was that the Refrigeration Division as well as the other divisions are self-governing.

I am convinced that that is a fact, although it might seem from a strict interpretation of the rules that the Board of Governors could make rules without consulting the body.

From what I have seen of Nema for the past several years, there is no indication whatever of any spirit of domination by the Board of Governors of the Refrigeration section. Moreover, from the meetings that I have attended of the refrigeration group, I have never seen any but the fullest disposition to be fair to all parties.

No Cause to Fear Action by Executive Committee

I do not think that any small manufacturer needs have any fear whatever of any deliberately selfish act being done by the Executive Committee, however it may be composed. Moreover, I think the small manufacturer always has the opportunity of taking his case up higher if he should consider it necessary to do so. As I understand it, the administrator will listen to any such complaints.

This new law is going to move pretty fast in the next few months. There are a lot of different trade associations going to head into Washington, and a lot of adjustments are going to have to be made. The question has been asked here, suppose there are wage and hour regulations adopted in one trade that are different from another trade, and the same company operates under both trades.

Undoubtedly there will have to be adjustments made, undoubtedly proper provision for flexibility must be made, so that when the general meeting of Nema at Hot Springs a couple of months ago authorized the Board of Governors of Nema with rather broad powers, I could see that that was advisable, too, because it is undoubtedly going to be necessary, as things develop during the next few months, for modifications of all of these codes to be made—where these codes collide or conflict with other codes. It is going to be impractical in all cases to wait for a complete industry vote. I think that the only way this industry or any other can really operate under this law is to delegate a certain amount of power to certain men, and have confidence that those men will be fair. Any other method would be clumsy.

But on the other hand, I am very firmly convinced that neither from the Board of Governors nor from the Executive Committee of this division will any rules emanate that need to be feared.

If possible, every change in the sub-code governing the refrigeration business, will be submitted to the membership. The only case I can conceive where that would not be done might be some kind of an emergency where the code was at variance with some other code, and some quick action had to be taken.

I think it is clear to all of us that this code that is now being discussed in Washington is just a master code, it is not the code of trade practices for the refrigeration industry at all. It is just a master code. Our own code is still to be written. As for a code of trade practices that should be adopted to insure proper competitive practices within the refrigerator business, that code is still to be written. There is the opportunity for those that have not joined Nema to come in and have a proper contact with the Government code.

Urges All Companies in Industry To Join Nema

I strongly urge all companies who are in this industry to join Nema just as quickly as they can, because those of us that are in it and wrestling with this problem, trying to work out a proper contact with the government and proper trade practices, certainly need all the help we can get. I certainly hope that companies in this industry who are not now members will come in quickly and join us in trying to work out the best possible system of trade practices.

SENTIMENT OF MEETING FAVORS NEMA

CHAIRMAN JOHNSTON: Am I correct in assuming that it is the feeling of this meeting that we continue, and ask for members of this industry to come along and join Nema, and that we will proceed under their banner? We have had no objections, we have simply had questions. Are there any objections here to that procedure?

(No response.)

If there are none, we will assume that such is the feeling of the meeting, and I would suggest that all members of the industry submit their names to Mr. Ruthenburg so that proper application forms may be sent them. Also, any members of the industry who know of other manufacturers who are not present that would be interested, that you submit their names. We certainly have not got a complete attendance.

I am going to ask Mr. Ruthenburg to make any suggestions that he might have to the non-electrical section of our industry, or the parts manufacturers, for their organization.

Ruthenburg to Handle Nema Applications

MR. RUTHENBURG: My suggestion as far as the manufacturers of non-electrical units and parts is concerned, is that they immediately organize a group, elect a chairman, and if they desire, an executive committee.

The next step for them to take is to find out where they are going to hang the checks. If they, after due deliberation and discussion, decide that they want to go along with that group in and their chairman will so indicate, I shall be very glad to take the matter up with the proper authorities in Nema and see if that can be arranged. If it cannot be arranged, I will gladly give them some indication of where they properly fit in. I think that is rather the obvious indication.

Now, if there is already in existence a trade association of which part of your members are affiliates, you might very well consider whether or not you want to go along with that group in whatever major connection it may finally develop.

Are there any questions about that?

SEEGER ASKS ADVICE ON CABINET GROUPS

MR. WALTER SEEGER (Vice president, Seeger Refrigerator Co., St. Paul, Minn.): I would like to ask a question: There are two associations operating today, including the old association that has been revived on account of this new Act.

The cabinet manufacturers meeting here today are quite a small minority. I do not believe, in fact I know, that the men here cannot speak for the others, and I do not think they would want to even speak for themselves. I am not speaking for myself. I question that I would, because it is a question in my mind.

Where will Washington make the Refrigerator Manufacturers' Association (either commercial or the household) hang their hats? Will they make them hang their hats with Nema, with the metal group, or with the furniture group?

We are hybrids, so to speak, and we do not belong in either one of them, and still we belong to all three. That, I think, is the position that we find ourselves in.

I would like to suggest that Washington be asked that question if it is a reasonable question to be asked. If they were to say Nema, we would know where to turn, and we should know that reasonably soon.

Now, the other associations of household men, commercial men, manufacturers, have both started drawing up their own code. I assume that those will eventually be sub-codes under a general code, such as Nema's general code, or something of that kind. Until Washington really says where we should go, I do not believe we can answer this question.

MR. RUTHENBURG: I think you are absolutely right. My only suggestion was a method by which, if you choose, that inquiry could be directed to Washington. If you would like to have it directed through the Nema group, possibly that can be arranged, and if you want it done we will try to arrange it. If you think the inquiry should be directed by one of your own group, by going to Washington direct, that is satisfactory. All that we are offering you are some suggestions that we hope will be helpful.

MR. SEEGER: We will give you the answer this evening.

MR. RUTHENBURG: Are there any other questions?

MR. EVANS: If men come into Nema now under regular procedures, is it understood that they will have an opportunity to be heard and consulted about this proposed sub-code before it is adopted?

CHAIRMAN JOHNSTON: By all means.

MR. EVANS: That is the understanding.

CHAIRMAN JOHNSTON: It is certainly the understanding.

MR. EVANS: Yes.

CHAIRMAN JOHNSTON: These application forms will be sent out as quickly as possible, and the new members will be brought into the meeting when this code is discussed, and that is why we want all the speed possible. All companies contemplating joining should get in as quickly as possible, so that they can participate in the writing of that code, because they will be controlled by it whether they are members or not. So if they will come in quickly, they can take part in the writing of the code, which we are very anxious to have them do.

Potter Registers Intention to Join Nema

MR. POTTER: Mr. Chairman, I think that at a time like this, with an opportunity to procrastinate, rather than act, the industry must face organization whether it wants it or not.

What I get out of this meeting is very clear to me: I think that Nema should be congratulated on the very broad attitude they have taken in calling this group together. They have supplied something that I believe is very necessary, a focal point for action. If you wait until government tells this division to go one place, another division to go another, you are going to miss the action that I think is necessary.

You have got to take your choice, as I see it, of going out and organizing a brand new organization, from the ground up, with all the possible chaos that that might mean. You have in Nema, as I see it, an organization that is functioning, that has the experience, and I believe the situation resolves itself down to one question: Do the people here have the confidence to put their action in back of that group as against waiting for some nebulous group to be formed?

I for one want to register my vote. I am for Nema, and that will be the next application.

CHAIRMAN JOHNSTON: Thank you, Mr. Potter.

Are there any other subjects that any of you men feel should be dealt with at this meeting? We seldom have an opportunity to get a group of this size and the affiliated industries together.

Burritt Moves Vote of Thanks

MR. H. W. BURRITT (Kelvinator Corp., Detroit): Mr. Chairman, I presume we are about to adjourn, and I wish to move a cordial vote of thanks for the hospitality afforded by Mr. Cockrell of the NEWS. (Applause.)

QUESTION: Each person here will receive application blanks, is that the idea?

CHAIRMAN JOHNSTON: Will each one desiring application blanks give his name to Mr. Ruthenburg immediately after this meeting, as we do not have the forms here.

VOICE: I understand.

CHAIRMAN JOHNSTON: And the forms will be obtained and mailed to them just as quickly as possible.

VOICE: This is something that I for one could not decide.

CHAIRMAN JOHNSTON: Well, you can at least decide to ask for a form.

VOICE: Right.

CHAIRMAN JOHNSTON: And it will be mailed to you.

MR. SEEGER: I would like to suggest that the members of the accessory group that met this morning in Room 512 adjourn to that room now to try to iron out some difficulties that we had this morning.

Accessory Companies Hold Second Session

CHAIRMAN JOHNSTON: It is understood, is it, that all the accessory people will move from this meeting to Room 512 for a further meeting? Before adjuornment, Mr. Cockrell has an announcement.

MR. F. M. COCKRELL (President, Business News Publishing Co., Detroit, Mich.): I would like you all to be sure to understand that dinner will be at the Wardell Hotel, one block north of here on Woodward avenue.

We will distribute, either at the dinner or before you get away, a list of names which was prepared in advance, plus the additions that we have been able to secure at this meeting. We would appreciate it very much if you would look over the list, and if your name, company connection, and address are not on the list, will you please add it and hand it to any member of the staff, so that we can give you a revised list of the complete attendance before you leave.

We are making the corrections as we have been able to obtain them, but there were cases where others have come in place of those originally mentioned. We would like to get the list correct, so see if your name is on the list, and if not please add it and turn it in to any of us, who will be at your service. All of you are invited up to Room 550, on the fifth floor, for the preliminaries.

(ADJOURNMENT)

Manufacturers of parts, supplies, and accessories, following the main meeting, met in room 512, where they agreed to a resolution proposed by Harvey B. Lindsay, president, Dry-Zero Corp., to the effect that they would form a group to affiliate with the Refrigeration Division of Nema.

MUIR APPOINTED DEPUTY ADMINISTRATOR OF ACT

WASHINGTON, D. C. — General Hugh S. Johnson, administrator for the National Recovery Act, has proposed the appointment of Malcolm Muir of New York as a deputy administrator, and of Prof. Alonzo E. Taylor of Stanford university, and Lucius R. Eastman of New York, president of the Hill Brothers Co., as members of the Consumers' Advisory Board.

Mr. Muir is intimate with the problems of the "capital goods" and machinery groups as chief executive of the McGraw-Hill magazines, and past president of the Associated Business Papers (the trade association of the business press). Mr. Muir was also a member of the National Committee for Industrial Rehabilitation and chairman of its New York Board, thus having been active in industrial recovery a year before the new law was enacted.

Professor Taylor, who is director of the Food Research Institute at Stanford university, was professor of pathology and physiological chemistry at the University of California for more than 10 years until 1910. From 1910 until 1921 when he became director of the Food Research Institute, Professor Taylor was Rush professor of physiological chemistry at the University of Pennsylvania.

Mr. Eastman is president of the American Arbitration Association and American representative on the economics committee of the League of Nations.

Time to Spare After the Shortest Refrigeration Meeting on Record

"Just boys again" are F. E. Sellman of Servel, and R. E. Imhoff and Ray Cosgrove of Westinghouse, as they test a fire alarm box.

Glenn Muffly, one of the industry's best known engineers, and Tom Evans were in a serious mood as the cameraman snapped this picture.

T. Irving Potter (left) of Tricold looks on attentively as I. R. Halsey of the same company points out the Wardell "where we eat."

Maj. Howard Blood of Norge (center) renews old acquaintanceships with H. M. Stewart (left) and E. E. McCray (right) of McCray.

BY GEORGE F. TAUBENECK - - -

Everybody Happy

It was with no little apprehension that chief executives of the electric refrigeration industry entrained for Detroit last week to attend the First All-Industry Conference.

Never before had representatives of practically every manufacturer in the business—large or small ever met around a table and looked one another over. They didn't know just what to expect, but they feared the worst.

As it turned out, however, the apprehensions were misapprehensions. The men all liked each other, and—wonder of wonders—they all agreed. This phenomenon might be factored as follows:

1. GEOFF JOHNSTON'S masterly handling and direction of the meeting.

2. F. M. COCKRELL'S satisfying lunch and arrangements for the comfort and well-being of his guests.

3. The fine spirit of cooperation shown by such men as THOMAS EVANS and T. IRVING POTTER, who were expected to provide disturbing fireworks.

4. The urgency of the emergency.

Mr. Johnston very wisely opened the meeting by calling on non-Nema members such as Mr. Evans and Mr. Potter at the beginning of the meeting. These men had their say. Others followed—"DICK" KRITZER of Peerless, W. A. CARSON of Sunbeam, ARTHUR RICHLAND of Zerozone.

* * *

Speedy Action

Whatever objections they voiced against control of the industry (under the Industrial Recovery Act) through the Refrigeration Division of the National Electrical Manufacturers Association were effectively answered by LOUIS RUTHENBURG, Nema consultant.

Came then a dynamic speech by Mr. Potter, urging all non-Nema members to join the party and vote the straight Nema ticket, and it was all over but signing the papers.

Chairman Johnston, next to whom the writer sat at the meeting, expressed privately no little surprise (and relief!) at the speed and ease with which the objective of the meeting had been consummated. Later "Dick" Kritzer averred that he had fully expected the meeting to last two or three days. Others had been prepared for rows, wrangles, and possibly an impasse. But no. All was sweet and lovely.

* * *

Johnston Out-Rogerses Will Himself

We really didn't know he had it in him. Geoff Johnston, we mean. We've known him for some time, and have seen him at work and play; but we didn't realize he was such a capital humorist.

The business of the day all settled, the executives elevatored up to the offices of the NEWS, where facilities for convivality were dispensed by Advertising Manager H. W. MATEER. By the time the chef at the Wardell was ready to ring the dinner bell for F. M. Cockrell's banquet, the cooperative mood of the afternoon had mellowed into one of friendship and affection.

Mr. Johnston sealed the bottle of milk-and-honey by his toastmastering.

It was a combination of Will Rogers, Harpo Marx, and Irvin S. Cobb, heavy on the Rogers.

We've heard the sage of Clairemont, Okla., keep a crowd convulsed for more than two hours, and thought no other man alive could duplicate that feat. But Mr. Johnston did just that, with some to spare.

He "ribbed" everybody present, with especial emphasis on cracks directed toward the ranking executive at the dinner, C. E. WILSON, vice president of the General Motors Corp.

Everybody enjoyed this "ribbing" hugely, including those who had to bear the brunt of his gentle sarcasm and what HARVEY LINDSAY, president of the Dry-Zero Corp., termed his "delicate allusions."

Most of us would have been highly pleased with ourselves had we been able to think of but one of the hundred first-class wisecracks "Geoff" tossed out during the evening.

Result: Each and every guest at the banquet went home convinced that his competitors in the refrigeration business were a bunch of swell fellows. Now, as Mr. Wilson of G-M put it, they'll almost hate to take business away from one another.

* * *

Close-ups of Leading Executives

Apparently one of the prerequisites to, as well as one of the perquisites of (note to printer: please preserve the sanctity of the difference between those two words) being an industry executive is a suntanned face.

First prize for the best burn goes to CHARLES GIBSON, president of the Gibson Electric Refrigerator Corp. Second place is awarded to J. M. FERNALD, vice president and general manager of Baker Ice Machine Co.

Other mahogany-colored phizzes were worn with distinction by "Dick" Kritzer of Peerless, "TED" QUINN and PAUL ZIMMERMAN of General Electric, Messrs. IMHOFF and COSGROVE of Westinghouse, HENRY BURRITT of Kelvinator, and LESTER ("ANANIAS") LARKIN of Larkin Refrigerating Corp.

Mr. Fernald, in a white Palm Beach suit, was most impressive and distinguished in appearance. So was "Charley" Gibson.

Thomas Evans, whom everybody was interested in meeting, is a small trim man with an oral flow of words as ready as his eloquence. Along with T. Irving Potter, Mr. Evans gets the palm for oratory.

E. E. McCRAY, octogenarian president of McCray Refrigerator Co., was the oldest—in years and experience—refrigeration man present.

INDUSTRY ACCEPTS LEADERSHIP OF NEMA

(Concluded from Page 1, Column 5)

Mr. Ruthenburg is expected to confer with Mr. Seeger and other manufacturers of parts and accessories relative to the method of procedure which this group will adopt.

During the course of the main meeting on July 6 Mr. Ruthenburg outlined the course which will probably be taken if the refrigeration industry decides to work with the Nema group in formulating a code to conform with the provisions of the Recovery Act.

The Board of Governors of Nema, according to Mr. Ruthenburg, has appointed a code committee of five which is now at work on a general code which will be broad enough to cover the operations of the entire Nema membership.

The Refrigeration Division will then draw up a supplementary code with provisions that will deal specifically with the operations of its membersship.

After the supplementary code of the Refrigeration Division has been accepted by the Board of Governors of Nema, the board will probably appoint a supervisor or supervisory committee to administer the code for the division. This supervisory committee is almost certain to be the executive committee of the Refrigeration Division, which is elected by members of the division.

Both Mr. Ruthenburg and Chairman Johnston stressed the fact that government advices make it plain that the administration intends to deal only with major industrial groups, and that if manufacturers of electric refrigerators formed their own association and submitted a code to the government, it is very likely that they would be refused a hearing and asked to align themselves with Nema or some other larger group.

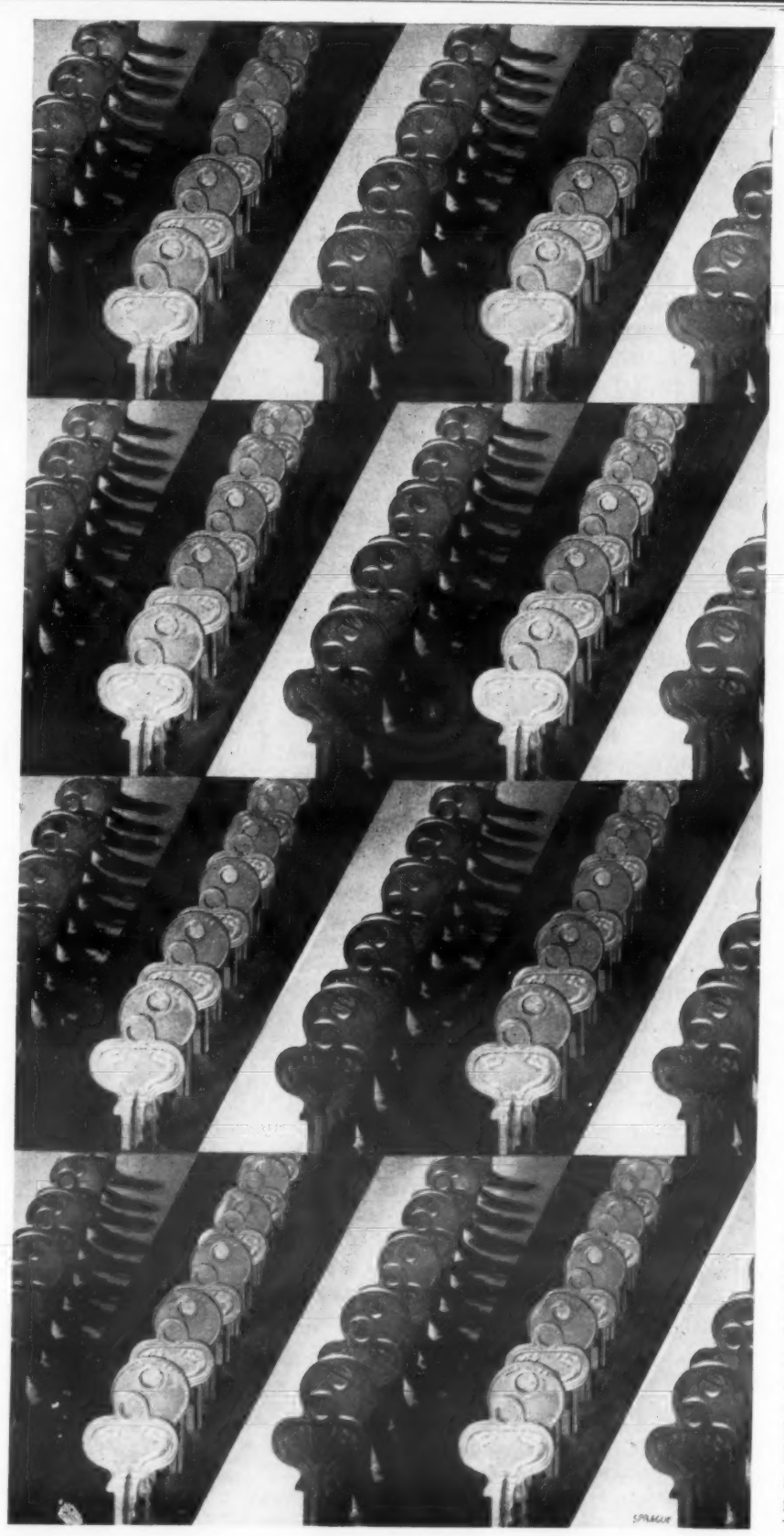
Most of the questions raised by nonmember manufacturers dealt with the matter of autonomy for the Refrigeration Division. Objections were raised to the appointive and veto powers of the Board of Governors of Nema, which give that group the right to reject a proposed supplementary code, and to appoint a supervisory committee without the approval of the members of the division.

Mr. Ruthenburg and representatives of manufacturers who are members of Nema explained that the Board of Governors had never in the past done anything but confirm the elections and resolutions which had been decreed by a vote of the members of the division, and that it was absurd to think that the board would do anything else in the future.

As the supplementary code would be drawn up only with the approval of the Refrigeration Division, and as the executive committee is elected by the vote of all the members of the division, the Refrigeration Division is autonomous to all practical purposes, Mr. Ruthenburg declared.

Furthermore, he points out, there will be public hearings on the code at which any manufacturer who believes that his interests are being jeopardized can get a hearing.

Mr. Ruthenburg read a synopsis of the master code which is being drawn up by the Nema code committee. The more important provisions of this code deal with maximum working hours (probably 36 hours a week with provisions for excess work of 144 hours per year); prohibition of selling below cost, with special provision for obsolete or superseded merchandise; the submission annually to Nema of each member's annual statement and such general statistics and data as the executive committee shall require; and the grouping of members by product classification with supplementary codes to be drawn up for each classification.



Exclusive

Offering . . .

642,000

LATCH-KEYS

. . . symbols of unhindered entry into the homes of 642,000 New York families . . . a vast army of typically American men and women who differ in most of their tastes and resources, yet are unanimous in *one great preference* . . . the NEW YORK EVENING JOURNAL. They conclusively prove this preference, year in, year out, by their outstanding response to its editorial features and to the merchandise offered in its columns. Not only does the JOURNAL offer to you, each evening of the week, the largest number of latch-keys to New York homes, it also assures a *fair reading* of your advertising . . . for it is with ample justification that the JOURNAL is called New York's BEST READ evening paper.

NEW YORK EVENING JOURNAL

New York's BEST READ *Evening Paper*

NATIONALLY REPRESENTED BY RODNEY E. BOONE ORGANIZATION

ELECTRIC REFRIGERATION NEWS
The Newspaper of the Industry
Published Every Week by
BUSINESS NEWS PUBLISHING CO.
Also publishers of REFRIGERATED FOOD NEWS (monthly) and REFRIGERATION DIRECTORY and MARKET DATA BOOK (annual)
550 Maccabees Building, Woodward Ave. and Putnam St.
Detroit, Michigan. Telephones: Columbia 4242-4243-4244-4245

Subscription Rates:
U. S. and Possessions and countries in Pan-American Postal Union: $3.00 per year; 2 years for $5.00
Canada: $6.00 per year (U. S. Money)
All Other Countries: $5.00 per year
Advertising Rates on Request

F. M. COCKRELL, *Publisher*
GEORGE F. TAUBENECK, *Editor*
JOHN T. SCHAEFER, *Engineering Editor*
PHIL B. REDEKER, *Assistant Editor*
ELSTON D. HERRON, *Staff Writer*

HOWARD W. MATEER, *Advertising Manager*
GEORGE N. CONGDON, *Business Manager*
JOHN R. ADAMS, *Production Manager*

Member, Audit Bureau of Circulations
Member, Associated Business Papers
Copyright, 1933, by Business News Publishing Co.

VOL. 9, NO. 11, SERIAL NO. 225, JULY 12, 1933

Fairness vs. Force

AT the conclusion of the Refrigeration Manufacturers Conference held in Detroit last Thursday it was evident that the executives were "sold" on the idea of affiliating with the Nema group (the Refrigeration Division of National Electrical Manufacturers Association). While it is probable that some doubts and misgivings may remain in the minds of those present as to just how all interests will be represented and protected, it was evident that the conference acquired a strong feeling of *confidence* in the Nema organization. Chairman G. M. Johnston deserves credit for a masterful job of "selling" in winning the support of such a large group, with so many diverse interests, in record breaking time.

Chairman Confronted by Difficult Situation

The chairman's job was by no means easy. Before the conference it was rather generally assumed that there would be much heated argument before any sort of agreement regarding a plan of action could be reached. Some of the members of the Nema group were frankly apprehensive that the present organization might be disrupted and that the industry might be split up into two or more warring factions at a time when united and constructive action is most urgently needed.

Because of past dissensions within the Nema group, it was felt that this nucleus was none too cohesive. Some manufacturers of complete refrigeration units, outside of the Association, were known to be frankly suspicious of the Nema setup and relationships. The situation was further complicated by bringing the suppliers of parts and materials into the conference. Certainly the chairman faced a new and very unusual assortment of interests and viewpoints when he opened this *first* all-industry conference.

Government's Challenge to Industry

It appears evident that Mr. Johnston was fully aware of his responsibilities and the difficulties of his task. If the meeting developed into a wrangle and got nowhere the future of the entire industry might be put in jeopardy. Industrial executives have been warned that they are being weighed in the balance and that if they fail to take advantage of this opportunity to manage their own affairs, they may find themselves subjected to forms of governmental control of a revolutionary character. The Government has made it clear that if the refrigeration industry, and other industries in similar meetings, should prove unable to harmonize their differences, the inevitable answer will be some form of dictatorship.

Mr. Johnston's strategy was in nowise haphazard. He decided upon a bold program contrary to the advice of some of his associates in the Nema group. His first move was to give the floor to the *opposition*. He made no attempt whatever to build up an atmosphere favorable to Nema before permitting objectors to state their views.

A perusal of the verbatim record of the meeting shows at once the wisdom of this course. The one big question in the minds of practically every speaker was whether each company, small as well as large, would have a *voice* in the proceedings and be properly represented in the scheme of control. Mr. Johnston evidently anticipated that question and answered it by an actual demonstration of Nema methods and of his own attitude as chairman of the Refrigeration Division. His obvious willingness to let every man have his say won the respect of the assembly immediately.

A Staunch Defender of Fair Trade

Acknowledged leader of the opposition to Nema was Thomas Evans, president of Merchant & Evans Co., Philadelphia, whose several letters published in recent issues of the NEWS stamped him as an opponent to be reckoned with in any debate. Moreover, Mr. Evans is no novice as an antagonist of "vested interests." The one-man campaign against public utility merchandising which he waged a couple of years ago showed that he knows his lawful rights and that he is willing to do battle for them. Clearly Mr. Evans is not a man to be awed by the size or numbers of his adversaries.

Nor is Mr. Evans a man who underrates the skill and strength of his enemy. Before he goes into a fight he prepares himself for it. He collected voluminous evidence to support his case against the utilities. His recent letters indicated that he had delved into the Nema by-laws and that he had studied the intricacies of the Industrial Recovery Act. Evidently, Mr. Evans came to Detroit prepared to defend the rights of the small manufacturer against any and all who might seek to trample or disregard them.

Evans Quick to Recognize Square Deal

But no one was quicker to recognize the fair and fearless attitude of the chairman than was Mr. Evans. He wanted a square deal and he got it—pronto. Here was true leadership and Mr. Evans accepted it in the spirit in which it was offered. Before the meeting ended Mr. Evans announced his intention of applying for membership in Nema.

Other executives who came to the conference with doubts or fears regarding the treatment they might receive if their interests were entrusted to the Nema procedures were likewise convinced that they sat among friends. Questions were asked and answered. Everyone was invited to express his opinions. Instead of a fight, the gathering became one of good fellowship.

The attitude of the non-members demonstrated that they were entirely reasonable and not disposed to demand any special favors. They want to stay in business and they are willing to take their chances of operating at a profit under any fair and equitable plan.

A Superior Grade of Psychology

At the very informal dinner given the visitors by the NEWS after the conference, Chairman Johnston again demonstrated his understanding of human nature. In a totally different atmosphere and in a new "character" of his own, he repeated his "performance" of making everybody a part of the party. We came away profoundly impressed by the superior grade of psychology which Mr. Johnston uses in handling a crowd.

We take this opportunity to recommend that the style of industry relations exhibited at the Detroit conference be adopted as a pattern for the future. The Nema by-laws appear to have been designed with a view to *control* from the top down. It was only because of assurances that the Refrigeration Division operates in a truly representative manner that the non-members were willing to accept some of the dangerous looking provisions of the Nema document. Those who attended the conference were not fully convinced that the Nema set-up is entirely *right*, but they were sold 100 per cent on the fairness of the present chairman. It is up to the Nema Board of Governors, Executive Committee, management, and members to justify and maintain that confidence. By making fair treatment the rule, there should be no need to apply force to put the new code into effect.

LETTERS

Universal Cooler Corp.
Detroit
July 8, 1933.

As chairman of the Refrigeration Division of the National Electrical Manufacturers Association, I wish to take this opportunity to extend to you and your staff our most sincere thanks for your assistance both in the matter of publicity and in helping to conduct the meeting of July 6.

G. M. JOHNSTON,
Chairman Refrigeration Div. of Nema.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.
July 7, 1933.

It is with very deep regret that I did not see or note your letter of June 29 regarding the meeting in Detroit on July 6. I was out of the city and it is quite probable that this letter reached me in time to be with you, but it did not come to my attention until this morning, and I only hope that our Mansfield people were present.

N. G. SYMOND,
Vice president.

Servel, Inc.
51 East 42nd St., New York City
July 5, 1933.

Your letter of June 29 has been received in Mr. Springford's absence from the city, therefore, it will be impossible for him to accept the special invitation extended at the request of Mr. G. M. Johnston to attend the conference, luncheon, and dinner party, and on Mr. Springford's behalf I wish to thank you for this kind invitation.

Our Mr. F. E. Sellman, vice president in charge of sales, is attending this conference.

FLORENCE R. ARNOLD,
Secretary to Mr. H. H. Springford.

Allied Store Utilities Co.
2401 N. Leffingwell Ave., St. Louis
July 5, 1933.

I regret very much that it is impossible for me to be in Detroit on July 6 to attend meeting of the Refrigeration Division, National Electrical Manufacturers Association, for discussion of cooperative action under provisions of the National Industrial Recovery Law.

I believe Mr. Stewart of the McCray Refrigerator Co. plans to be there, and I have asked him if he would be kind enough to transmit to me the results of this meeting.

W. B. MCMILLAN,
President.

Grigsby-Grunow Co.
5801 Dickens Ave., Chicago
July 6, 1933.

Your kind invitation, accompanying your letter of June 29, to a conference of refrigerator manufacturers in Detroit on July 6 was not received until yesterday, as I was away over the week-end and the Fourth.

I should have liked very much to be present, although, on account of the late notice, would have been unable to on that date; but I will be interested in reading a full report of the conference in the next issue of ELECTRIC REFRIGERATION NEWS.

B. J. GRIGSBY,
President.

Grinnell Washing Machine Corp.
Grinnell, Iowa
July 5, 1933.

I appreciate your letter of the 29th forwarding an admission ticket to the Refrigeration Manufacturers Conference to be held in Detroit tomorrow. The letter arrived in this morning's mail, and it is, of course, a little late to plan on attending the session.

However, we want to assure you that we are glad to note the progress the ELECTRIC REFRIGERATION NEWS has made in assisting in bringing about the trade conference in the electrical refrigeration field, and although we cannot attend the meeting, we will be governed by any action taken.

We here at Grinnell have a diversified line of major appliances consisting of washing machines, electric refrigerators, oil burners, and beer bottle coolers, and will necessarily have to be governed by codes of fair trade practice under the NIRA in each branch.

I happen to be a vice president of the American Washing Machine Manufacturers Association, and at the present time, we are busily engaged in getting our code ready to submit to Washington at a very early date.

We trust that the refrigeration meeting will bring about a unanimity of opinion in order to present a unified front and a code of ethics and practices that will stabilize prices in this field, because, of course, it is the chief ill that now exists in this industry.

If by any chance you have an opportunity after the meeting to communicate to me the results, although I suppose they will be published in ELECTRIC REFRIGERATION NEWS later, I will appreciate it deeply.

I. N. MERRITT,
Vice president & general manager.

Domestic Industries, Inc.
282 North Diamond St.
Mansfield, Ohio

I wrote you on July 1, with reference to someone from our company attending the meeting on July 6, but I am sorry to advise at this time that we are unable to have a representative at this meeting.

We would, however, appreciate it if you would advise us by return mail, the expense or on what basis we might join the Refrigeration Division of the Electrical Manufacturers Association. No doubt you can give us this information.

I would also appreciate it very much if you would be kind enough to give us a report on what takes place at this conference, and want you to know that we regret not being able to send someone from our company to attend this meeting. However, we want you to know that we are very much interested and want to go right along with the program.

WM. SWITZER,
President.

Brunner Mfg. Co.
Utica, N. Y.
July 3, 1933.

Thanks very much for your letter of June 30, inviting me to be present to attend the conference of refrigeration manufacturers in Detroit on July 6.

I would appreciate it if you would convey to Mr. G. M. Johnston my appreciation of this invitation—and express my regrets at my inability to be present.

We will be very glad to cooperate with the other refrigeration manufacturers and would like to be advised of the action taken at the preliminary meeting.

It just happens that I am tied up with other matters that make it impossible for me to get away on that paricular date and for that reason I cannot be present.

I will be glad to make a special effort to be present at any further meetings of this group.

G. L. BRUNNER,
Treasurer and general manager.

The Maine Mfg. Co.
Nashua, N. H.
July 3, 1933.

Thank you for your kind letter of June 29 telling me of the meeting to be held by the Refrigeration Division of the National Electrical Manufacturers Association in Detroit on Thursday, July 6.

I regret to state it will be impossible for me to attend this meeting, but I shall look forward with interest to any minutes of the meeting, which I presume will be more or less covered in an early issue of ELECTRIC REFRIGERATION NEWS.

PHILIP ELLIS STEVENS,
President.

Narragansett Machine Co.
Pawtucket, R. I.
July 3, 1933.

With regard to the meeting of the Refrigeration Division of the National Electrical Manufacturers Association, we will not be able to be represented there at this time.

We would be glad, however, to be kept in touch with the performance of the association and whatever is done in the formation of a code.

ALBERT E. THORNLEY,
Vice president.

The Starr Co.
Richmond, Ind.
July 5, 1933.

We wish to thank you for your invitation to our Mr. Harry Gennett to attend the refrigerator manufacturers' conference tomorrow. We had anticipated being able to attend; however, today we find it impossible. Must look, therefore, to reports in your paper or any other reports which you may see fit to send us in this regard.

Might say that, of course, we will be very glad to cooperate with whatever action the refrigeration trade takes.

FRED GENNETT,
Secretary.

Sanitary Refrigerator Co.
Fond du Lac, Wis.
July 1, 1933.

The Sanitary Refrigerator Co., manufacturer of the Sanitary electric refrigerator, have not received an invitation to participate with other such manufacturers at the meeting to be held at 2 o'clock on the afternoon of July 6.

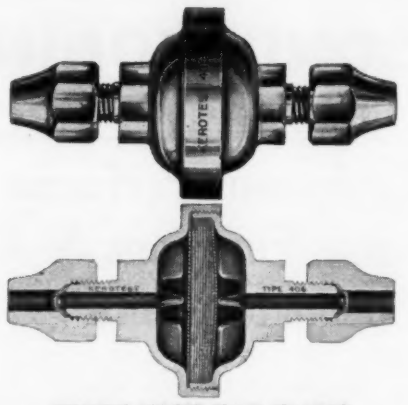
The Standard Refrigerator Co., an entirely different corporation of this city, manufacturing the Standard electric refrigerator, did receive such an invitation and will be represented.

The writer is officially connected with both of these corporations and, therefore, suggests that the Sanitary Refrigerator Co. also receive an invitation and a registration card, mailing them to the Sanitary Refrigerator Co., Fond du Lac, Wis.

WM. MAUTHE,
President.

New PRODUCTS *by* KEROTEST

for improved mechanical refrigeration and air conditioning service ... ...

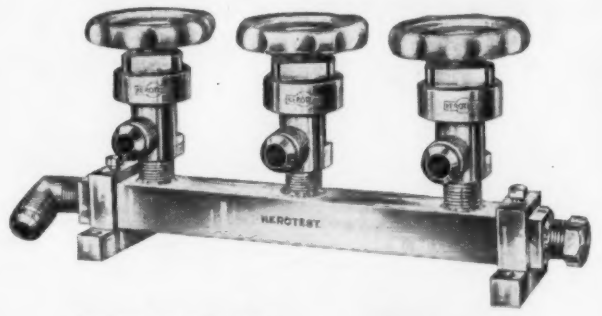


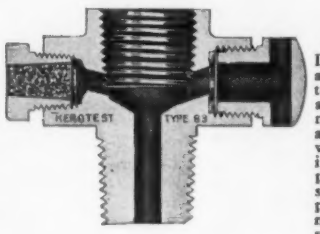
KEROTEST FORGED BRASS STRAINER

This new Type 406 Strainer is generously large and provides a very efficient trap for tube scale, compressor chips and other foreign matter which finds its way into the liquid refrigerant or oil . . . Construction consists of two pieces of fine mesh phosphor bronze with a layer of heavy white felt between . . . prevents all solid matter from passing through the liquid line to float or expansion valve needles. Furnished complete with extra heavy forged flare nuts . . . equipped only with ¼" male SAE Flare connectors forged and machined directly on the body pieces.

KEROTEST MANIFOLDS WITH EXTRA LARGE VALVES

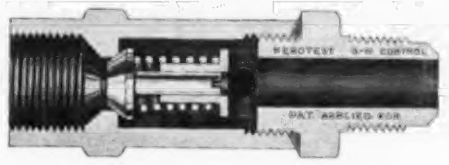
You may now obtain Kerotest Manifolds with LARGE VALVES having ⅜" SAE flare connections on the lateral openings and ¾" female pipe openings on the ENDS in addition to the smaller manifolds with ½" SAE lateral flare connections and ⅜" end openings . . . furnished with Kerotest Packed or Kerotest Packless Valves all equipped with handwheels. There are no restrictions through Kerotest Manifolds or Valves and the openings are always equal to the full size of tubing.





KEROTEST COMBINATION HEAT AND PRESSURE SAFETY DEVICE FOR DRUMS

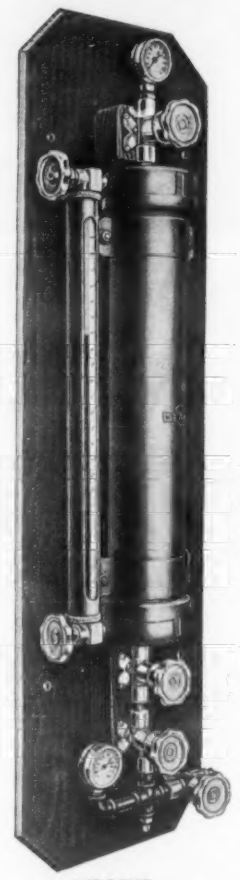
Designed to protect the drum against high pressure or high temperatures . . . equipped with a fusible metal safety plug which melts at 165 degrees temperature as well as a rupturable disc which will open when subjected to an internal drum pressure of approximately 420 pounds . . . designed primarily for 5 and 10 pound refrigerant drums. This new Kerotest development makes it unnecessary to obsolete present valve equipment.



KEROTEST GW CONTROL—TYPE 120

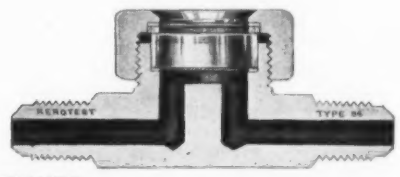
Has been described by a nationally known refrigeration engineer as "one of the greatest advancements in refrigeration mechanics in the past ten years." When placed on the suction side of the unit between the evaporator and compressor, the GW control prevents higher back pressures in the lower pressure coil . . . eliminates interference with operation of the thermostatically controlled expansion valve . . . makes possible complete control of the compressor switch . . . enables each coil to act independently thus reducing running time of the compressor to the absolute minimum.

Made in ½" SAE and ⅝" SAE Sizes Only



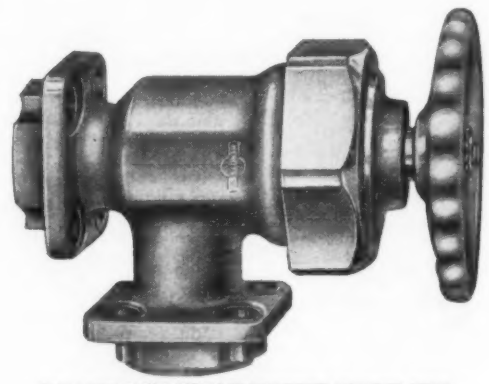
KEROTEST TYPE 470 CHARGING STAND

Made of drawn seamless steel with a liquid level glass of special extra heavy glass tubing ideal for this purpose . . . designed with a heavy steel shield and a laminated, shatterproof flat glass guard which deflects pressure away from the face of the operator in case of breakage of the liquid level indicator. Top of cylinder is also provided with a rupturable safety device which can be tubed to the open air eliminating escape of gas into room where men are working.



KEROTEST TYPE 54 LIQUID INDICATOR

Saves much experimenting and testing when a system is not working 100 per cent efficient . . . the mere presence of bubbles in the chamber below the annealed sight glass always indicates a shortage of refrigerant . . . available in ¼" SAE and ⅜" SAE sizes.

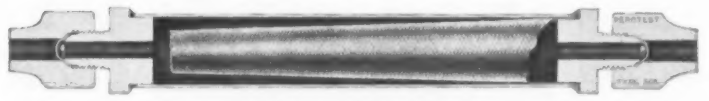


THE NEW 1¼" AND 1½" KEROTEST FORGED STEEL DIAPHRAGM PACKLESS VALVES

Used extensively on large air conditioning installations . . . made with square 4 bolt-hole flanged ends . . . designed with a ¼" pipe tap for purging valve or gauge connection . . . Full unrestricted openings equal to the full inside diameter of the pipe is a Standard Kerotest feature in these valves.

TYPE 867 DIE-CAST WHITE METAL RATCHET WRENCH

Has a remarkably wide use in the refrigeration industry . . . applicable to ⅛ as well as ¼" valve stems . . . has ½" hollow hexagon which will fit standard size ⅛" cap screws . . . Ratchet end permits very fine and sensitive valve adjustment and easy operation . . . non-ratchet end made with square holes to fit ¼ and ⅛ inch valve stems for the purpose of loosening tight joints.



KEROTEST TYPE 505 SCALE TRAPS

Designed especially where maximum strainer area is required and where the refrigeration system contains an excess amount of chips and foreign matter. Made only with ¼" SAE Flare connection . . . fitted with extra heavy forged flare nuts.

ALWAYS anticipating the needs of the Refrigeration Industry, KEROTEST presents herewith some of their newly developed products that are of special interest to every progressive air conditioning and refrigerating engineer.

These new KEROTEST products make possible the correction of old difficulties in mechanical refrigeration . . . introduce new sales-building advantages . . . assure trouble-free service to the user.

That is why the leaders in the industry use and specify KEROTEST Valves and Fittings. They find in this organization a group of experts, specializing in the design and construction of products of advanced design, thoroughly tested and proved by laboratory research . . . an organization ready at all times to cooperate on any problems that may arise.

We invite your inquiries and suggestions.

KEROTEST MANUFACTURING COMPANY

PITTSBURGH « » PENNSYLVANIA

LOCAL REPRESENTATIVES
(Stocks Maintained for Immediate Delivery)

Amarillo, Texas.....816 Grant St.
Axtell Co.

Atlanta, Ga.....285 Marietta St.
J. M. Tull Rubber and Supply Co., Inc.

Baltimore, Md.....108 South Street
Clendenin Bros., Inc.

Boston, Massachusetts....110 High Street
A. E. Borden Co.

Cincinnati, Ohio.....Burbank Street
Merkel Bros. Co.

Cleveland, Ohio.....1748 East 22nd St.
Williams & Company, Inc.

Decatur, Illinois.....133 Williams St.
Field & Shorb Co.

Des Moines, Ia...W. 11th & D.M.U.R.R.
C. L. Percival Co.

Fernwood, Miss...711 N. Tangipahoe St.
Enochs Sales Co.

Fort Worth, Texas.....8th & Grove Sts.
Axtell Co.

Greensboro, N.C.....714 W. Market St.
Home Appliance Service Co.

Houston, Texas.....734 M & M Bldg.
Lingo-Walter Company

Indianapolis, Ind.....229 E. South St.
F. H. Langsenkamp Co.

Lubbock, Texas.....900 Avenue H
Axtell Co.

Milwaukee, Wis.....512 N. Water St.
Chase Brass & Copper Co., Inc.

Minneapolis, Minn.....145 N. 10th St.
Chase Brass & Copper Co., Inc.

Newark, N.J...Jefferson and Chestnut Sts.
McIntire Connector Co.

New York, N.Y.....58 Warren Street
Paramount Electrical Supply Co., Inc.

Philadelphia, Pa.....1135 Callowhill St.
Melchior, Armstrong, Dessau Co., Inc.

Pittsburgh, Pa.....901 Pennsylvania Ave.
Williams & Co., Inc.

Portland, Oregon.....200 N. 13th St.
Harrison Sales Company

Rockford, Ill.....305 East State St.
All-Makes Refrigerator Service Co.

San Angelo, Texas.....506 So. Oak St.
Axtell Co.

St. Louis, Mo.....2817 Laclede Avenue
Brass & Copper Sales Co.

Seattle, Wash.....314 Ninth Ave., No.
Harrison Sales Co.

Sioux City, Iowa.....2310 East 8th St.
National Refrigeration Service

Springfield, Mass.....300 Broad St.
Home Utilities Company

Syracuse, N.Y.....314 W. Fayette St.
Syracuse Supply Company

Washington, D.C....308 10th St., N.W.
Refrigeration Equipment & Supply Co., Inc.

Winnipeg, Man., Canada..156 Bell Ave.
Artic Ice and Fuel Co., Limited

FACTORY REPRESENTATIVES

Chicago, Ill.....G. C. Taylor
1344 W. Lake St. (Local Stock)

Dayton, Ohio.....E. J. Kimm
517 Grafton Ave.

Detroit, Mich.....Thomas B. McLaughlin
18273 Santa Rosa Drive

Los Angeles, Calif.....Van D. Clothier
1015 E. Sixteenth St. (Local Stock)

New York, N.Y.....J. A. Strachan
806 Graybar Building

San Francisco, Calif....A. W. V. Johnson
Merchants Exchange Bldg. (Local Stock)

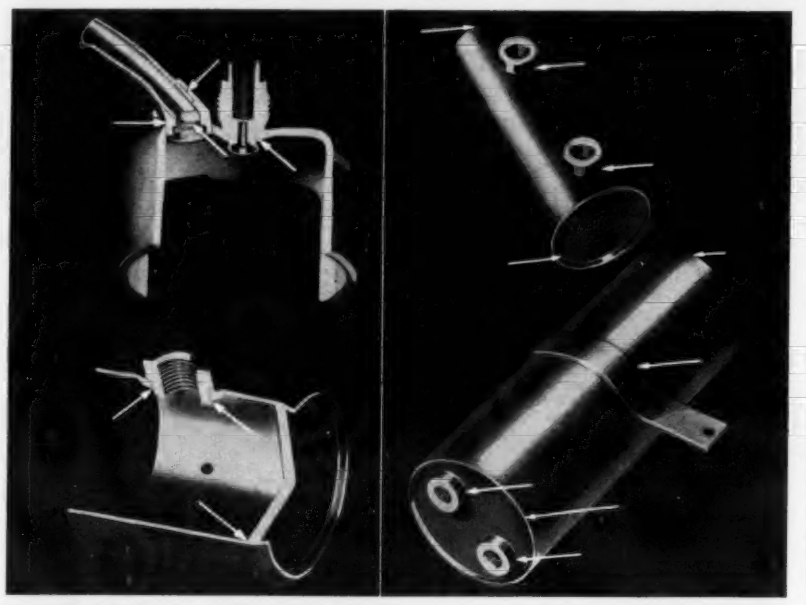
FOREIGN REPRESENTATIVES

Australia.....F. C. Lovelock, Ltd.
222 Clarence St., Sydney, N.S.W.

Europe, Melchior, Armstrong, Dessau Co., Inc.
116 Broad St., New York, N.Y.

Hawaiian Islands, Theo. H. Davies & Co., Ltd.
Honolulu, T.H.

Puerto Rico.....Refrigeration Supply Co.
P.O. Box 328, Puerta de Tierra, San Juan



HYDROGEN ELECTRIC WELDING

Is Done Completely in the Bundy Plant

TO profit by the far-reaching advantages of this modern assembly process requires no special equipment in your own plant. The huge "Zeppelin" Electric-Welding furnace in the Bundy plant is at your service. You simply furnish Bundy with parts machined to a snug fit (or assembled if you prefer). From this point Bundy assumes complete responsibility or, Bundy will furnish the units complete to your specifications.

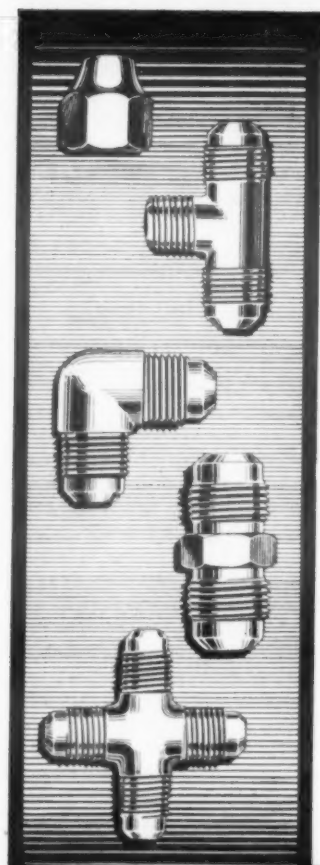
Hydrogen-Welding is adaptable to practically any product assembled from iron or steel parts. Simple changes in design often permit the replacement of heavy, expensive castings and forgings by light, inexpensive stampings, drawn shapes, bar stock, screw machine products, etc.

Hydrogen-Welding is accomplished without flame or arc, and without the apparent application of any metal at the seams. Yet it produces a bond which has been proven to be absolutely gas-tight and as strong as the steel in the parts welded.

Welded parts emerge from the furnace absolutely clean and free from scale or oxides both inside and out. This is an important advantage in the case of closed containers such as floats, tanks, headers, etc.

Bundy engineers will be glad to cooperate in adapting your designs to the Hydrogen-Welding process. Sends prints and specifications for quotations.

BUNDY
TUBING COMPANY
4815 Bellevue Ave. Detroit, Mich.



BUILT RIGHT TO STAY TIGHT

SEEPAGE PROOF PIPE AND TUBE FITTINGS

A COMPLETE LINE

Every possible fitting requirement of the industry can be supplied by Commonwealth.

Stock fittings, both regular and extra heavy are available for immediate shipment in large or small quantities.

Special designs, produced from hot forgings or extruded rod are supplied to leaders in automatic refrigeration and we have the capacity, the resources and the personnel to adequately serve a number of other manufacturers.

Every fitting sold is 100% inspected; tube ends are protected in shipping; threads are correctly cut to a No. 2 S.A.E. fit—all to insure absolute satisfaction with Commonwealth merchandise.

We solicit your inquiries

Catalog No. 36
Sent on request

COMMONWEALTH BRASS CORPORATION
COMMONWEALTH AVE. AND G.T.R.R.
DETROIT

AIR CONDITIONING

Campbell Equipment Performs 6 Air Conditioning Functions & Also Eliminates Noise

NEW YORK CITY—Equipment designed to perform the six major functions of air conditioning, plus that of noise elimination, is being manufactured by the Campbell Metal Window Corp. here, and is being marketed in five metropolitan centers through the organization's own branches, according to C. B. Graves, advertising manager of the air-conditioning division.

The company is making four different models of air-conditioning equipment which give seven-point air treatment. Model C, first of this group, is a self-contained steel cabinet unit 55½ in. long, 14½ in. deep, ranging in height from 28 to 36 in. This unit's outdoor air intake duct, which is installed in a window, is 24 in. wide, and may be adjusted to fit window sill widths from 4 to 8 in.

Maxim Silencer Used

A Maxim Silencer labyrinth is located in the cabinet, and will exclude 90 per cent of the ordinary street noise, the manufacturer claims. An 8-in. Sirocco fan and housing, mounted on one end of the double-extension shaft of a 1/20-hp. motor, draws outdoor air through the window duct, through a filter and silencer, and then blows the air into the room at the rate of 200 c.f.m.

A damper operator and segment is at the side of the air intake duct. At the "shut" position, the outdoor air flow is shut off by means of the damper and a by-pass door in the back of the cabinet, permitting only the recirculation of indoor air.

On the instrument panel is a four-point (off-high-medium-low) switch which regulates the motor fan speed to control the outdoor air supply and recirculation of room air. Air entering the unit is cleaned by a Filtro-Bac mat, encased in a wire mesh screen. The filter is a long-grain cotton mat.

Humidification Tank

At the top and right end of the cabinet is a 1-gal. water tank, with an automatic float valve to keep an unvarying water level, to provide humidification. Float valve may be connected to the city water supply. A 200-watt immersion heater in the tank, connected to the ventilating fan circuit, evaporates the water, and the vapor is then distributed through the room by a recirculating fan. Capacity of this device is 1 pt. per hr., says the maker.

Heating coil, or radiator, at the top of the cabinet, is made up of a temperature-regulating steam valve connected to the inlet tube of a copper heating coil, with a thermostatic tube connecting the valve with the thermostat on the instrument panel.

2 Sirocco Fans Employed

The unengaged end of the valve is connected to the steam supply, while the outlet tube serves as a steam return. Room air passed over the heater is recirculated by two 6-in. Sirocco fans on the opposite shaft of the motor driving the ventilating fan.

These two fans have a recirculating capacity of 280 c.f.m., and, based on recirculation, the heating coil has a capacity equivalent to 50 sq. ft. standard radiation, says the manufacturer.

Cooling coil is located directly below the heating coil, and is similar to the latter in construction. The expansion valve is connected to the inlet tube of the cooling coil. Latent heat of the refrigerant absorbs heat and cools the evaporator coil, then returns to the compressor through the outlet tube of the coil.

A current of recirculated air is driven by the two Sirocco fans across the coil. Refrigerating capacity is said by the manufacturer to be 8,000 B.t.u. per hr. The cooling coil also dehumidifies the air, the condensate passing into a pan and through a drain tube with shut-off valve into a metal container at the right end of the cabinet.

Refrigerating Unit Silenced

The refrigerating unit is located at the left end of the cabinet. It is enclosed in a steel case lined with sheet lead and rock wool to reduce noise and vibration. The compressor and motor-supporting frame is mounted on Keldur, as is the steel casing, to reduce vibration.

A 2-cylinder water-cooled compressor with two V-belts driven by a 1-hp. motor is used in the refrigerating unit. The condenser is of the double concentric tube type, with refrigerant in the outside tube, and cooling water in the inside tube.

A control switch for this apparatus is located on the operating panel, with a valve inside the case to control the cooling water supply. A pressure control inside the case regulates the refrigerant (F-12) pressure. The unit contains 5½ lbs. of refrigerant.

This air-conditioning unit uses approximately 60 gals. of water per hr., and will completely condition the air in a room having dimensions of 20x20x10 ft., according to the manufacturer.

Remote Installation

Campbell company's model D air conditioner is similar to the model C just described, except that it is designed for remote installation of the refrigeration compressor. Where this type is used, the compressor may be of sufficient capacity to operate the cooling and dehumidifying coils in several of the conditioning units.

The D model has a cooling capacity of 15,000 B.t.u. per hr., and a heating capacity equivalent to 50 sq. ft. of radiation. It will evaporate 2 pts. of water per hr., and will recirculate 490 cu. ft. of air, with 200 cu. ft. of fresh air. Its water consumption is 80 gals. per hr., and it has a humidifier element of 40 watts. It is the manufacturer's claim that this unit will condition the air in a room of 20x40x10 ft.

Only three functions of air conditioning—cooling, dehumidification, and ventilation—are provided by the Campbell company's model J unit. A steel cabinet 42 in. long, 14 in. wide, and 31 in. high, mounted on casters, contains the conditioning apparatus.

4,500 B.t.u. Capacity

The cooling coil occupies the upper right half of the cabinet, and consists of a copper tube and copper fins having an inlet and outlet connection. The expansion valve is connected to the inlet tube of the evaporator. Cooling capacity of the evaporator is 4,500 B.t.u., the manufacturer states.

To each end of the double shaft 1/30-hp. motor, located directly below the evaporator coil, is connected a 6-in. Sirocco aluminum fan. These fans draw air from the room, pass it over the cooling coil, then discharge it into a room through a louvre opening in the top of the cabinet. They provide circulation of 300 c.f.m.

Condensate from the dehumidification process drips into a pan under the evaporator coil, and from there flows through a tube, equipped with shut-off valve into a container located at the right end of the cabinet.

The compressor in this unit is driven by a ½-hp. motor. The unit's water consumption is approximately 50 gals. per hour, and the conditioner will cool and dehumidify the air in an average room having dimensions of 15x15x9 ft., according to Campbell engineers.

Summer Conditioner

Model K summer conditioner is similar to the model just described, except that it is designed for remote installation of the compressor. Unit K has a cooling capacity of 12 000 B.t.u. per hr., and will recirculate air at the rate of 350 c.f.m. The compressor used with this unit is a 1½-hp. job. This model consumes approximately 77 gals. of water per hr.

The Campbell organization is also in production on a winter air-conditioning unit which provides for heating, humidification, noise elimination, and ventilation. Other products of this company include a cabinet and desk type humidifier and air washer, and a filter-noise eliminator.

KAUFFMAN USES ELECTRIC REFRIGERATION IN 4 UNITS

ST. LOUIS—Four new room coolers have been announced this season by the Kauffman Air Conditioning Corp. here. Two are self-contained with an electric refrigerating system in the bottom of the cabinet, while two others are built for remote installation of the refrigeration equipment.

Types F and I are self-contained, with cooling capacities of ½ ton and 1 ton, respectively. Smaller model is 41 in. high, 29 in. long, and 15 in. wide, delivering 275 c.f.m. of cooled air. The compressor is driven by a ½-hp. motor. Type I has a 1-hp. motor, and is housed in a 50x39x16½-in. cabinet. Motor size is 1 hp.

Models H and G are designed for remote installation of the compressor (or an ice-melting tank), and have provision for heating and humidifying in winter. H is 41x27x14-in. in size, while G is 30x40x14 in. Cabinets are fabricated of furniture steel, finished in grained walnut.

STRANG AIR COOLER SENDS HEAT OUTSIDE THRU WINDOW DUCT

KANSAS CITY, Mo.—Now being sold by refrigeration dealers and distributors, the new air conditioner of the Strang Air Conditioning Corp. of this city is designated as a portable, electric room cooler because of its freedom from water connections. The manufacturing plant for the air conditioners is the Michiana Products Corp. in Michigan City, Ind.

The room cooler utilizes a conventional compression refrigerating machine to cool, dehumidify, and wash the air to be conditioned, but extraction of heat from the condenser and its dissipation to the outside is done with a special evaporation tank inside the cabinet, according to John J. Strang, president of the company.

Water in the evaporation tank in the lower part of the cabinet, just above the compressor, is maintained to a depth of 4½ in. by a float valve which feeds additional water from a reserve tank above. Submerged in the evaporation tank are 40 ft. of ½-in. copper tubing coil which comprise the condenser.

Agitator in Water Tank

In the center of the evaporation tank is a small motor-driven agitator whose blades create a continuous spray of water. Through this spray is blown air from the outside to cool the water in the tank by evaporation.

When water in the tank has evaporated to a 2-in. level, the float drops, causing a warning blade to rise and notify the user that the reserve tank should be filled. The tank requires replenishing about twice a week.

A three-piece adjustable window panel is furnished with each air-conditioning system. In one section of this panel are two circular openings 5 in. in diameter which correspond with two circular openings in the back of the cabinet. Openings in the cabinet are connected to openings in the panel by two pieces of flexible tubing.

When the adjustable window panel is installed in the window opening, the window is pulled down on it. Air is sucked from the outside through one opening, pulled through the compressor compartment to cool the motor and compressor, and is drawn into the inlet of the blower (600 c.f.m.) and forced into one end of the evaporation tank. There the air picks up heat from the water by evaporation, and is discharged to the outside through the second opening in the window panel.

A propeller fan in the upper portion of the cabinet draws air into the conditioner through grilles in the top of the cabinet, forces it through a finned coil for cooling and dehumidification, and out into the room through grilles in the front of the cabinet. The 12-in. fan rotates at a speed of 1,140 r.p.m., delivering 500 c.f.m. of conditioned air into the room, Strang claims.

0° to 5° Refrigerant Temperature

Refrigerant temperature in the cooling coil is from 0° to 5° F., using methyl chloride. This causes dehumidification, the condensate being collected in a pan below, and drained to the evaporation tank. By operating with a wet dehumidifying coil, the manufacturer claims a washing effect on the air. Impurities sink to the bottom of the evaporation tank.

The cooler employs a thermostatic control, the compressor and agitator motor operating according to dictates of the room air temperature. The circulating fan operates all the time the system is turned on. A high pressure cut-out stops the system in case of excessive pressure in the system due to lack of cooling water.

The Strang line of air conditioners includes three models. Model B stands 53 in. high, 36 in. wide, and 28 in. deep, and has a refrigeration capacity of 1,320 lbs. of ice melting effect per day. Model C and model CC are 56 in. high, 36 in. wide, and 28 in. deep. Model C has a capacity of 2,280 lbs. i.m.e. per day, while model CC has 2,808 lbs. of capacity per day. Copeland refrigerating systems are used.

The cabinet, of furniture steel and angle iron construction, is finished in grained walnut, and is mounted on four 4-in. ball-bearing casters with rubber composition wheels.

Model B has a 2-cylinder 2x1½-in. compressor operating at a speed of 400 r.p.m. It is driven by a ½-hp. motor, using a double V-belt drive. Model C is equipped with a 2-cylinder 2¼x3-in. compressor, running at 300 r.p.m. from a 1-hp. motor connected by a triple V-belt drive. Model CC has a 2-cylinder 2¼x3-in. compressor running at 400 r.p.m. with a triple V-belt drive from a 1½-hp. motor.

The air-cooling coil in model B consists of 48½ ft. of ⅝-in. copper tubing with four fins to the inch giving a radiating surface of 65 sq. ft. Model C and CC have 57½ ft. of the same size tubing, with a surface of 80 sq. ft.

For winter operation, designers of the Strang air conditioner suggest removing the flexible tubing from the outside air connections, and running the circulating fan and agitator so that humidity will be added to air.

NEW ROOM COOLERS

UNIT & CENTRAL TYPE CONDITIONERS BUILT BY GRINNELL FIRM

PROVIDENCE, R. I.—In production by the Grinnell Co. are two types of air-conditioning systems—one a unit system using the circulation of brine, or of a heated fluid, through unit conditioners, and the other a central system of the conventional type.

The unit system, called the "Grinnell Thermolier—Air Conditioning Type," consists of a mechanical refrigerating machine, fluid cooler, fluid heater, and circulating pump—all installed in the basement.

During the summer, the refrigerating machine is used to cool brine which is pumped to suspended- or floor-type conditioning units in the rooms upstairs. These units have a fan which blows the air over the coils to cool and dehumidify it.

In winter months, a fluid heated in the basement by a steam supply is pumped through the individual units, and air is blown across the coils of each unit to heat the room air.

Grinnell's central-type air-conditioning system is designed primarily to replace existing hot air furnaces and to supply complete air conditioning for homes or small business places.

Firebox of the hot air furnace is removed, and a hot water unit is installed at the side of the furnace. Made as a part of the hot water unit is a Grinnell atomizing device which serves to humidify the air in winter.

For cooling and dehumidifying purposes, an ammonia compressor and cold water converter, or an ice bunker, will be installed with this system. The existing ducts are used to carry the conditioned air to rooms of the house.

CONTINENTAL PRODUCES PORTABLE ROOM COOLERS

NEW YORK CITY—Continental Air Conditioning Co., Inc., here is in production on a line of portable self-contained room coolers ranging in capacities from 8,000 B.t.u.'s per hour upward, according to P. Arthur Kingly, vice president and general manager.

The company is also manufacturing a line of air-conditioning equipment for central installation where ducts or suspended cooling units are used, but is featuring its unit conditioners.

In operation, the "Kingly" portable room cooler draws air through a filter in the upper compartment of the cabinet by means of a bucket type fan which is connected directly to the motor. The air is then forced across direct-expansion refrigeration coils, where it is cooled and dehumidified.

The condensing unit is air cooled, heat from the compressor being blown out through a window. When it is not possible to place the unit near a window, ducts must be installed to carry off the warm air.

A series of tests on the Kingly unit, conducted by Dr. E. Vernon Hill of Chicago, showed the following results in removing pollen:

Test No.	Air Velocity Thru Filter	Pollen Counts Per 70 Fields Before Filter	After Filter	Pollen Removal Efficiency
1.	400	960	24	97.5%
2.	300	1,540	14	99.1%
3.	228	2,590	41	99.7%
4.	152	2,989	17	99.9%

The Kingly equipment is applicable for use with warm air heating systems to heat and humidify the air during the winter, according to the company's vice president.

RUDY BUILDS 2 UNITS TO HUMIDIFY & CLEAN AIR

DOWAGIAC, Mich.—Two types of equipment to humidify, clean, and circulate the air of a residence are being manufactured by the Rudy Furnace Co. of this city, for use with its various models of warm air furnaces. The conditioners bear the trade name "Bon Air."

One of the conditioning units is the washer type, while the other is of the dry filter variety, according to Sidney B. Tremble, treasurer of the manufacturing company. Both types of units are equipped with centrifugal fans to handle air circulation.

In the washer type conditioner, humidification and cleaning of the air are effected by means of two filters composed of spun glass laid in several thicknesses between fine mesh screens. Spray nozzles play a mist of water against the filters.

The dry-filter conditioner contains removable trays holding glass wool filters treated with dust-collecting neutral oil. When filled with dirt, the filters may be replaced. With this system, humidity is supplied through an automatic humidifier set in the furnace.

De La Vergne Unit Features Reverse Refrigeration

PHILADELPHIA—Two features of the new air conditioner which the De LaVergne Engine Co., sales agent for Baldwin-Southwark Corp. here, introduced this spring are reversibility of the refrigerating machine to produce heat in the winter, and the fact that the air conditioner is self-contained, requiring no cooling water.

Production on the new machines has been under way for some time in the Eddystone (Pa.) plant of the Baldwin-Southwark Corp., and several installations have been made. Merchandising plans for this season include installation of air conditioners within a 200-mile radius of the factory, so that performance may be observed. Price of the unit is $600 f.o.b. Eddystone, installation costs to be borne by the purchaser.

7-Lb. Freon Charge

The cabinet houses a 2-cylinder opposed, vertical shaft compressor, direct connected to a 2-hp. motor operating in the same enclosure as the compressor. Bore and stroke are 1¾x1½ in., operating at the motor speed of 1,800 r.p.m. to produce 1½ tons of refrigeration effect per 24 hours. The system is charged with seven pounds of freon.

To install the air conditioner, electrical connections large enough to carry 2½ kw. are required, and an air duct must be provided under a raised window sash to exhaust the heat of compression and heat removed from the cooled air. Since the water of condensation removed from the air in a room under summer conditions is re-evaporated and blown outdoors with the air stream which cools the compressor and condenser, designers of this machine have eliminated condensation drains.

Centrifugal Fan

As shown in the adjoining line-drawing of the system, the machine employs a double-ended centrifugal fan, one of the blowers bringing in room air to be conditioner, the other drawing air in from outside the building to cool the compressor and condenser and discharge it again to the outside.

The fan (1) draws air from the room and passes it through the filter (2) to remove dust and dirt. The air then passes through water-collecting trays (3), next through the finned type direct-expansion cooling coil or evaporator (4), and is discharged upward and outward into the room at an angle intended to induce room circulation.

At the same time condenser-cooling air is drawn in from outside the room by means of fan (5), and passes through a filter section to remove dust and dirt which might clog up the air passages.

Picks Up Water

Then the air passes through the water-disposal tray (7), picks up the water which is sprayed into it by the high velocity air jets, and contacts the warm surfaces of the condenser (8) to remove its heat. At the same time entrained water is evaporated and carried out of the system by the air discharged to the outside atmosphere, designers of the system explain.

Water collected in trays (3) flows through a pipe to trays (7) to maintain an even level, in such a manner that water removed by condensation from room air is evaporated without using drains.

Heat picked up in coil (4) evaporates the refrigerant which passes through pipe (10), and through the three-way cock (11) to the compressor (9). The compressed refrigerant (containing heat at a higher temperature and including the heat of compression) passes through the three-way cock (12) and pipe (13) to coil (8) where the heat is removed and the refrigerant liquefied. This liquid passes through trap (14)—which in the cooling cycle is inactive—then through trap (15) into coil (4) to repeat the cycle.

In reversing operation of the system to obtain heat, the fans operate the same as before, but the position of the three-way cocks is reversed so that coil (8) becomes the evaporator, coils (8) and (4) being identical in construction.

Thus the refrigerant passes through a pipe to cock (11), to the compressor, then through cock (12) and is piped to coil (4) which is now the condenser. Completing the cycle, the liquid passes through trap (15)—now inactive—to trap (14) which permits it to flow to coil (4).

In this way the apparatus removes heat and moisture from the outside air stream and puts them into the room air stream, making it a heating and humidifying machine. The water lies in both pans, and is evaporated by the hot condensing coil.

Each cabinet circulates 600 cu. ft. of room air per minute. Dimensions of the cabinet are 56 in. long, 22 in. wide, and 43 in. high.

6 FUNCTIONS PERFORMED BY MUELLER'S 'CLIMATOR'

MILWAUKEE — Cooling, dehumidification, heating, humidification, cleaning, and circulation are the functions performed by the "Climator" air-conditioning system being manufactured by the L. J. Mueller Furnace Co. here.

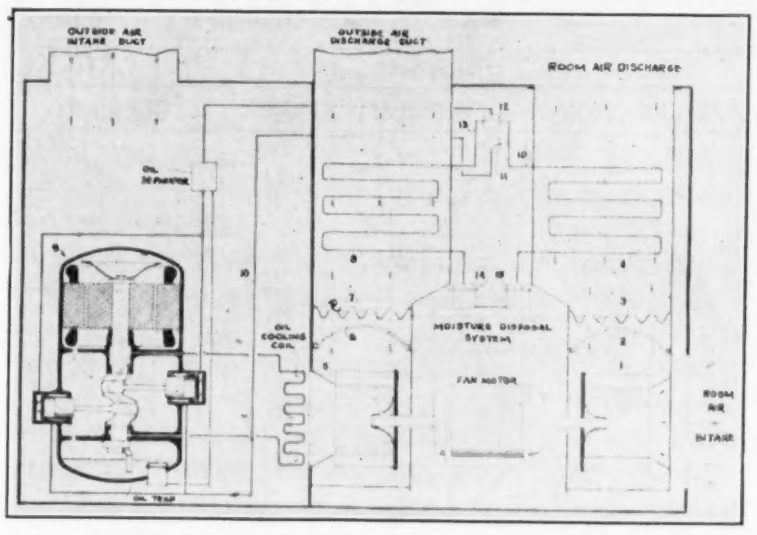
The entire Mueller system is composed of a number of units, each of which is designed to perform one of the air-conditioning functions. When desired, any of the units may be omitted at the time a system is installed.

First unit of the complete Mueller system is the company's gas furnace, with automatic control. Adjoining the furnace is an air washer which is used only when heat is being supplied to wash and humidify the air. A Sturtevant fan adjoins the washer to draw air down through a filter and then through the washer and furnace, and to the rooms above.

Two types of filters are available for use with the Climator system. One is made of cellulose fiber, the other of viscous cell material. Frigidaire equipment is used for cooling and dehumidifying the air.

The Mueller company is manufacturing one unit known as the "Climator III," which may be installed in conjunction with any type of warm air furnace to give forced circulation, washing, and filtering of the air.

Reversing the Cycle for Heat



De La Vergne engineers reverse the cycle of their self-contained room cooler to heat in winter, see explanation below.

CONDITIONING UNITS BUILT BY LAKESIDE

HERMANSVILLE, Mich.—Designed to cool, dehumidify, clean, circulate, and humidify, the "Furblo Fairweather" air conditioner is being manufactured by the Lakeside Co. of this city. The system may be installed in connection with any heating unit, says I. W. Rowell, general manager.

The Fairweather conditioner is of the central type, ducts being used to distribute the conditioned air throughout the residence or building. The Lakeside company does not manufacture the refrigerating equipment used in the air conditioner, but uses Universal Cooler equipment to cool and dehumidify the air.

A feature of the Fairweather unit is its arrangement of the filter and washer. After passing through a water spray, where it is washed and humidified (or dehumidified), it is forced through a V-type glass wool filter which is constantly washed by a part of the water spray to remove all dirt from the glass wool fibres. The filter also prevents drops of water from entering the blower chamber, it is pointed out by the manufacturer.

Operation of the Fairweather unit is controlled by a room thermostat and humidistat, which start the entire system operating when the temperature and humidity pass a predetermined level, says Mr. Rowell. A solenoid valve is used to automatically shut off water to prevent excess humidity.

To insure relatively silent operation of the system, canvas duct connections between parts of the system are used, and the filtering and washing units are installed separately from the blower, and are connected by canvas.

A heat limit control automatically starts the Furblo blower and washer operating when the furnace bonnet temperature reaches a predetermined level.

YOUR air conditioning system can be no better than the controls which govern its refrigeration, heating, humidifying or circulating functions. There are 147 different Minneapolis-Honeywell air conditioning controls. They provide the flexibility that makes it possible to use exactly the type of equipment necessary to achieve the specific results required of your system and enable it to perform with the greatest efficiency and general satisfaction. They make it unnecessary to compromise performance and results because of the limitations caused by the lack of adequate control equipment. Let the Minneapolis-Honeywell engineer in your city assist you in selecting exactly the proper controls suitable for your particular system. Then you will be sure that your equipment is always functioning as you intended it should. Minneapolis-Honeywell Regulator Company, 2807 Fourth Avenue South, Minneapolis, Minnesota. Branch offices and distributors in all principal cities.

MINNEAPOLIS-HONEYWELL

Control Systems

Air-Conditioning Directory Classified by Functions

SUMMER AND WINTER FUNCTIONS	Summer Functions		All-Year Functions		Winter Functions	
	REFRIGERATION	DEHUMIDIFICATION	CLEANING	CIRCULATION	HEATING	HUMIDIFICATION
Air Conditioning Engineers, Inc. "Ace" 2256 Reisterstown Road, Baltimore, Md.	Electric refrigeration	Cold water spray	Water spray	Blower	Steam	Water spray
American Blower Corp., 6000 Russell St., Detroit, Mich. Series "O"	Ice water or refrigerating machine	Cold surface		Sirocco fans	Hot water	
Series "R" Sirocco	Ice, tap water or electric refrigeration	Cold water surface	Bag filter	Sirocco fans	Hot water	Water spray atomizer
Industrial	Mechanical refrigeration (Central system)	Cold water spray	Water spray or filter	Fans	Steam	Water spray
American Furnace Co. "Afco Duo-Blo" 2719 Morgan St., St. Louis, Mo.	Electric refrigeration	Cold evaporator surface	Filter	Centrifugal blower unit	Warm air	Water spray
Air-Control Systems, Inc. "Zephyr Air" 2240 N. Racine Ave., Chicago, Ill.	Electric refrigeration	Cold finned core and cold water spray	Dense water spray	Blower type fan	Steam or hot water	Dense water spray
Autovent Fan & Blower Co. "Autovent" 1805 N. Kostner Ave., Chicago, Ill.	Electric refrigeration	Cold evaporator surface	Filter	Blower	Steam coil or furnace	Water spray
Buffalo Forge Co. "Buffalo Comfort Cooler" Buffalo, N. Y.	Electric refrigeration	Cold evaporator surface		Centrifugal fan	Steam coil	
Betz Unit Air Cooler Co., Inc. "Unicool" 6 W. Ninth St., Kansas City, Mo.	Ice or electric refrigeration	Cold water spray	Water spray	Fan	Steam or hot water	Water spray
Campbell Metal Window Corporation, Pershing Square Bldg., New York, N. Y. Campbell and Maxim Silencer	Electric refrigeration	Cold evaporator surface	Filter	Fan	Steam or hot water	Evaporation by heating water
Carrier Products Corp. 850 Frelinghuysen Ave., Newark, N. J. "Home Weathermaker"	Electric or steam ejector refrigeration	Cold evaporator surface	Filter	Blower	Warm air or steam	Spray
Continental Air Conditioning Co. "Kingly" 131 W. 21st St., New York, N. Y.	Electric refrigeration	Cold evaporator surface	Filter	Fan	Hot air	Evaporation by heating water
Conditioned Air Corp. "Airco" 7424 Melville Ave., Detroit, Mich.	Electric refrigeration	Cold evaporator surface	Filter and water spray	Blower	Steam or hot water	Water spray
Corozone Co. "DeLuxe Aquazone" 110 Hanna Bldg., Cleveland, Ohio	Puddling of water and use of ice	Copper refrigerant fins	Water current or spray	Fan		Evaporation by heating water
Dail Steel Products Co. "Dailaire" Lansing, Mich.	Electric refrigeration	Cold evaporator surface	Filter and water spray	Blower	Warm air	Water spray
De La Vergne Engine Co. "De La Vergne" Philadelphia, Pa.	Electric refrigeration	Cold evaporator surface	Filter	Fan	Reserving refrigeration cycle as heat pump	Evaporation and atomizing
Economy Baler Company, Ann Arbor, Mich. Health-Air Systems	Not furnished but can be used with refrigeration systems	Cold water spray if tap water is cold enough or refrigeration system is used	Water spray. Filter can be used in conjunction	Blower	Steam, hot water, or warm air	Water spray
The Edwards Mfg. Co. "Hot-Kold" Cincinnati, Ohio	Electric refrigeration	Cold evaporator surface	Filter	Centrifugal fan, dual speed	Warm air	Evaporation from heating water
Fox Furnace Co. "Sunbeam" Elyria, Ohio	Electric refrigeration	Cold evaporator surface	Filter	Blower	Warm air	Water spray
Frigidaire Corp. Dayton, Ohio	Electric refrigeration	Cold evaporator surface	Filter optional	Fan	Steam or hot water	Evaporation by heating water
A. Gehri & Co. "Silentair" Tacoma, Wash.	Ice	Cold surface	Filter and water spray	Blower	Warm air	Water spray
General Electric Company, Air Conditioning Dept., 120 Broadway, New York, N. Y.	Electric refrigeration	Cold evaporator surface	Dry filters	Blower	Steam	Hot water flowing over sets of screens
Grinnell Co. Providence, R. I. "Thermoller—Air Conditioning Type"	Electric refrigeration	Cold evaporator surface		Propeller fan	Steam	
Holland Furnace Company, Holland, Mich.	Electric refrigeration	Sprayed evaporator surface	Filter and water spray	Centrifugal blower	Warm air	Water spray
Ilg Electric Ventilating Co. "Ilg" 2850 N. Crawford Ave., Chicago, Ill.	Electric refrigeration or ice	Cold evaporator surface	Filter	Fan	Steam or electricity	Evaporation by heating water or patented wick principle
King Ventilating Co., Owatonna, Minn.	Electric refrigeration or ice	Spray	Water spray	Blower		Water spray
Kauffman Air Conditioning Corp. 4485 Olive St., St. Louis, Mo.	Electric refrigeration	Cold evaporator surface	Filter	Fan	Steam	Water spray
Lakeside Co. "Fairweather" Hermansville, Mich.	Electric refrigeration	Cold water spray	Filter and spray	Blower	Warm air	Spray
Lewis Air Conditioners, Inc., 829 Second Ave., South, Minneapolis, Minn.	Circulates ice water through heat absorber	Cold surface of heat absorber	Filters	Fan	Steam or hot water	
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich. Convector	Circulates cold water cooled by electric refrigeration or ice	Cold evaporator surface	Moist surfaces	Fan	Hot water	
J. H. McCormick & Company, Williamsport, Pa. Airtrol	Electric refrigeration or cold water cooled by electric refrigeration or ice	Finned radiator surface	Filters	Fans	Steam	Wicks controlled by hydrostat or steam jets
L. J. Mueller Furnace Co. "Climator" 197 Reed St., Milwaukee, Wis.	Electric refrigeration	Cold evaporator surface or cold water spray	Filter and water spray	Blowers	Warm air	Water spray or automatic humidifier
National Korectaire Sales Co., 228 N. LaSalle St., Chicago, Ill. Korectaire	Ice or cold water from well or cooled by electric refrigeration	Cold dry evaporator surface and cold water surface	Impingement on moving water surface	Cone fan	Steam or hot water	Evaporation
Niagara Blower Company, 6 E. 45th St., New York, N. Y.	Electric refrigeration or ice	Cold evaporator surface or cold water spray	Filter and water spray	Fans	Steam	Water spray and evaporation by heating water
Parks-Cramer Co., Fitchburg, Mass. Parkspray Certified Climate	Electric refrigeration	Cold water spray or evaporator surface	Filter and water spray	Fan	Steam, hot water, warm air or electric heaters	Water spray
Premier Warm Air Heater Co., Dowagiac, Mich.		Cold water spray	Filter and water spray	Twin blowers	Warm air	Water spray
Rudy Furnace Co. "Bon-Air Conditioner" Dowagiac, Mich.			Filter and water spray	Blower	Warm air	Water spray
Servel Sales, Inc., Evansville, Ind.	Electric refrigeration	Cold evaporator surface	Filter	Blower	Steam	Water spray
B. F. Sturtevant Company, Hyde Park, Mass.	Electric refrigeration or ice	Cold evaporator surface or water spray	Filter or water spray	Fans and blowers	Steam, hot water vapor or warm air	Water spray and evaporation by heating water
The Trane Co. "Climate Changer" La Crosse, Wis.	Electric refrigeration, ice or cold water	Cold evaporator surface or cold water	Filter and water spray	Fan	Steam or warm air	Water spray
United States Air Conditioning Corp. 2131 Kennedy St., N. E., Minneapolis, Minn. Kooler-Aire, Arctic Nu Air and Balmi-Aire	Electric refrigeration	Cold water spray when and as required	Water spray or flooding nozzles	Centrifugal fan	Steam, hot water or warm air	Water spray
Westinghouse Electric & Mfg. Co. East Pittsburgh, Pa.	Electric refrigeration	Cold evaporator surface	Filter	Fans	Steam	Water spray
The Williamson Heater Company, 337 W. 5th St., Cincinnati, Ohio DeLuxe Comfort System	Electric refrigeration or ice	Cold evaporator surface	Adhesive type filters	Centrifugal blowers	Warm air	Automatic drip humidifier
X L Refrigeration Co., Inc., 1834 W. 59th St., Chicago, Ill. Hilger	Electric refrigeration	Cold water or brine spray	Water spray	Fans	Steam	Water spray
York Ice Machinery Corporation, York, Pa.	Electric refrigeration	Cold evaporator surface or water spray	Water spray and filter	Fans through ducts or direct	Duplex cooling and heating surface	Mist-type humidifier

SUMMER FUNCTIONS						
Audiffren Refrigerating Machine Co. 227 Colden St., Jersey City, N. J.	Electric refrigeration	Cold evaporator surface	Filter	Blower		
Baker Ice Machine Co., Inc. "Baker" 1522 Evans St., Omaha, Nebr.	Electric refrigeration	Cold evaporator surface	Filter or spray	Blower		
Barrett Regulation Engineers Co. "Breco" 1322 Warrensville Center Rd. Cleveland Heights, Ohio	Ice	Cold surface	Wet moving belts	Fan		
Buffalo Forge Co. Buffalo Floor-Type Cooler	Electric refrigeration	Cold evaporator surface		Centrifugal fan		
Buffalo "Buffalo Suspended Unit Cooler"	Electric refrigeration	Cold evaporator surface		Propeller fan		
Carrier Products Corp. 850 Frelinghuysen Ave., Newark, N. J. "Room Weathermaker"	Electric refrigeration	Cold evaporator surface	Filter	Blower		
"Carrier Comfort Cooler"	Ice	Cold surface		Blower		
Chicago Pump Co. "Northern Breeze" 2336 Wolfram St., Chicago, Ill.	Ice	Cold surface of fin-type radiator	Water	Blower		Evaporation by heating water
ChilAire Corporation, 3115 Troost Ave., Kansas City, Mo.	Ice	Cold absorber surface	Water spray	Sirocco type fan		
H. S. Kaiser Co. "IceAir & Kaiserair" 936 W. Chicago Ave., Chicago, Ill.	Ice	Ice surface	Filter	Fan		
Lewis Air Conditioners, Inc., 829 Second Ave., South, Minneapolis, Minn.	Ice	Cold surface		Fan		
Kelvinator Corp. "Kelvinator" 14250 Plymouth Road, Detroit, Mich.	Electric refrigeration	Cold evaporator surface	Filter, washed by condensate	Two centrifugal fans		
Marlo Electric Corporation, 5241 Botanical Ave., St. Louis, Mo.	Electric refrigeration	Cold evaporator surface	Filter	Blower type fan		
Modine Mfg. Co. "Ice Fan" Racine, Wis.	Ice	Ice surface		Fan		
Motors Metal Mfg. Co. "Komforte Koolaire" 5936 Milford Ave., Detroit, Mich.	Ice	Cold ice surface		Fan		
Pure-Aire Corp. "Pure-Aire" 7 S. Cicero Ave., Chicago, Ill.	Ice or electric refrigeration	Cold evaporator or ice surface	Water spray	Fan		Water spray
Scott-Newcomb, Inc. "Pioneer Room Cooler" 1947 Pine St., St. Louis, Mo.	Electric refrigeration	Cold evaporator surface		Fan		
Standard Engineering Works, 4343 Duncan Ave., St. Louis, Mo. Kool-A-Room	Ice	Cold copper fins	Bag filter	Sirocco fans		
Strang Air Conditioning Corp. Commerce Bldg., Kansas City, Mo.	Electric refrigeration	Cold evaporator surface		Fan		Water spray
Universal Cooler Corp., 7424 Melville Ave., Detroit, Mich.	Electric refrigeration	Cold evaporator surface	Filter and water spray	Fan		
The Vilter Manufacturing Company, 2234 S. 1st St., Milwaukee, Wis.	Mechanical refrigeration	Cold surface		Fan		
Wepsco Steel Products Co., Blue Island, Ill. Roto Cold	Ice	Cold surface of ice container	Wet ducts	Fan		
Young Radiator Co. Racine, Wis.	Electric refrigeration or ice	Cold evaporator surface		Blower		

WINTER FUNCTIONS	Summer Functions		All-Year Functions		Winter Functions	
	REFRIGERATION	DEHUMIDIFICATION	CLEANING	CIRCULATION	HEATING	HUMIDIFICATION
Bryant Heater & Mfg. Co. "Dualator" 17825 St. Clair Ave., Cleveland, Ohio			Filter	Large volume fan	Steam condenser	Heating water in pan
Forest City Foundries Co. "Niagara" 2500 W. 27th St., Cleveland, Ohio				Blower	Warm air	Direct evaporation
Green Foundry & Furnace Works "Colonial" Des Moines, Iowa			Filter or spray	Blower	Warm air	Evaporation
Hess Warming & Ventilating Co., 1211-17 S. Western Ave., Chicago, Ill.			Filter	Centrifugal blower	Warm air	Wire mesh wheel breaks up water into fine spray
Home Furnace Company, Holland, Mich.			Filter and water spray	Blower	Warm air	Water spray
International Heater Co. "Economy" 101 Park Ave., Utica, N. Y.			Filter or spray	Blower	Warm air	Water spray or evaporation of heating water
W. E. Kautenberg Co., Freeport, Ill. Marvel				Fan	Electric heating wire	Evaporation by heating water
Lennox Furnace Co. "Aire-Flo" Marshalltown, Iowa			Filter and water spray	Blower	Warm air	Water spray by whirling disc
Motor Wheel Corp. "MW Weather Control" Lansing, Mich.			Filter or water spray	Blower	Warm air	Evaporation by heating water
Pennsylvania Furnace & Iron Co. Warren, Pa.			Filter	Blower	Warm air	Evaporation by heating of water
Perfection Stove Co. "Superfex" 7609 Platt Ave., Cleveland, Ohio			Filter	Blower	Oil-burning air circulating system	Evaporation of water
Robinson Furnace Co. 213 W. Austin Ave., Chicago, Ill.			Spray and filter	Blower	Warm air	Spray
George D. Roper Corp. "Roper" Rockford, Ill.			Filter	Fan	Hot air	Evaporation by heating of water
Security Stove & Mfg. Co. 1630 Oakland Ave., Kansas City, Mo.			Filter	Fan	Hot air	Spray
Thatcher Co. Newark, N. J.			Filter and water spray	Blower	Hot air	Water spray
Waterman-Waterbury Co. "Comfortrol" Minneapolis, Minn.			Filter and water spray	Fan	Warm air	Water spray
Wood Hydraulic Hoist & Body Co. 7924 Riopelle St., Detroit, Mich. "Gar Wood"			Filter and water spray	Blower	Steam or warm air	Water spray and evaporation of heating water

40 Manufacturers Adopt Standard Air-Conditioning Definitions

CHICAGO—A new set of definitions of complete, winter, and summer air-conditioning equipment was agreed upon by 40 manufacturers of air-conditioning equipment in a recent meeting arranged here by Newell-Emmett Co., Inc., advertising agency of New York City, according to R. K. Jones of the agency.

These definitions are published below in this column. It was further decided that equipment designated as either complete, winter, or summer air-conditioning equipment must perform these functions to provide related control within certain standards.

Another subject brought up was certification of equipment by manufacturers for the benefit of the purchasing public. Certification was divided into technical codification which the manufacturer would follow in building equipment, and certification to the purchaser that the equipment would properly perform the functions for which it was bought.

It was pointed out that machinery is already set up for technical codification or certification, with organizations such as American Society of Heating and Ventilating Engineers, American Society of Refrigerating Engineers, American Society of Mechanical Engineers, National Electrical Manufacturers Association, and National Warm Air Heating Association already providing machinery to set up technical standards.

Discussion uncovered the great complexity of any plan to certify performance to a purchaser. It was suggested that after contractors' plans for an air-conditioning installation had been completed, they might be presented to an association for examination, checking, etc.

Definitions agreed upon by the 40 manufacturers present were:

Complete air-conditioning equipment is that which provides simultaneous control of temperature, humidity, air motion, and cleaning within an enclosure throughout varying seasons.

Winter air-conditioning equipment provides simultaneous control of temperature, humidity, air motion, and purification within an enclosure in the winter months.

Summer air-conditioning equipment provides for simultaneous control of temperature, humidity, air motion, and purification during the summer months.

All of the above functions must be performed to provide related control within the limits set down in the Report of the American Society of Heating & Ventilating Engineers Committee on Ventilating Standards.

No manufacturer, or dealer, shall have the right to use the term "Air Conditioning", "Summer Air Conditioning", or "Winter Air Conditioning", unless the equipment offered provides the functions outlined above within the standards provided for. For instance, equipment which provides humidification alone must not be described by the term "Air Conditioning." It shall be called humidification equipment or some similar defining term.

FEE & STEMWEDEL MAKE 'AIRGUIDE'

CHICAGO—Fee & Stemwedel, Inc., here is manufacturing an instrument for indicating the condition of the air in a room. Called the "Airguide," the device has a round face on which are two dials—one to register the temperature, and the other the percentage of relative humidity.

Airguide has a modernistic case of black and chromium.

George D. Roper Builds Central Systems

ROCKFORD, Ill.—Heating, cleaning, humidifying, and circulation of the air are provided by the air-conditioning equipment being manufactured by the George D. Roper Corp. of this city.

Heart of this system is the Roper gas-fired warm air furnace, equipped with a motor-driven blower to circulate the air. The humidifier is a porcelain-enameled pan.

Manufacturers of Humidifiers

The following companies manufacture equipment which provides for humidification:

American Machine Products Co. "AmPeCo" Marshalltown, Iowa

American Radiator Co. "Ideal Cascade" 40 W. 40th St., New York, N. Y.

Automatic Humidifier Sales Co. "Humidrip" 6560 Cass Ave., Detroit, Mich.

Clements Mfg. Co. 6650 South Narragansett Ave., Chicago, Ill.

Emerson Electric Mfg. Co. 2018 Washington Ave., St. Louis, Mo.

Gilbert Co., A. C. "Airifier" New Haven, Conn.

Hexcel Radiator Co. "Control-air" 57 Erie St., Milwaukee, Wis.

Murray & Nickell Mfg. Co. "Murnick" 2608 Arthington Blvd., Chicago, Ill.

Norge Corp. "Norge Air Conditioner" 670 E. Woodbridge St., Detroit, Mich.

Swartzbaugh Mfg. Co. "Klenzair" 1336 W. Bancroft Ave., Toledo, Ohio

Timken Silent Automatic Co. "Airlux" 100 Clark St., Detroit, Mich.

Wilcolator Co. 17 Nevada St., Newark, N. J.

Westinghouse Electric & Mfg. Co. East Pittsburgh, Pa.

Workrite Specialty Co. 3129 N. 28th St., Milwaukee, Wis.

LARKIN *Humi-Temp* UNITS *at the* FAIR AT CHICAGO

Now Over 40,000 Larkin Coils in Daily Use

LAST week we invited your inspection of a giant cooler 102'x9'x7' refrigerated by a Williams Ice-O-Matic Compressor and four LARKIN *Humi-Temp* COIL UNITS at the Victor Vienna Garden Cafe at A Century of Progress.

Other World's Fair Williams installations, with LARKIN *Humi-Temp* UNITS, include the Chas. Mueller Schlitz Garden Restaurant and the Live Stock and Meat Exhibit where meat in all stages from animal to table is exhibited under refrigeration.

See these practical demonstrations of *Humi-Temp* performance when in Chicago. Let us send you complete data.

Humi-Temp Units are Ideal For Beer Cooling

LARKIN Refrigerating Corporation

Originator and Manufacturers

ATLANTA, GA., U.S.A.

WAREHOUSES
Brooklyn - Chicago

100% VERTICAL SURFACE

U.S. PATENT No. 1776238

LARKIN COILS

Sit in your CUSTOMER'S PLACE

Get a new view of the words: "Insulated with Corkboard!"

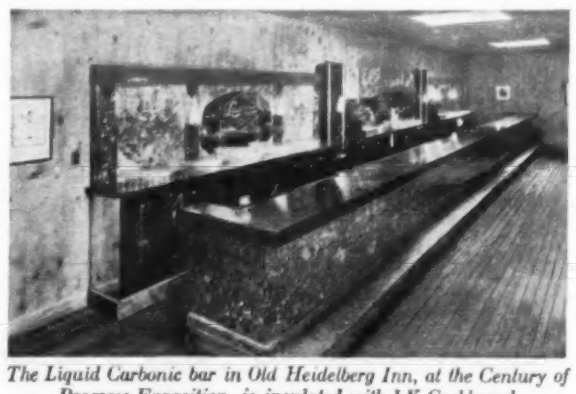
STEP out of your present rôle. Sit down, just once, in the place of the man who *buys* refrigerated equipment. Remember, you're interested now only in how the equipment performs.

Listen as the salesman says: "This equipment is insulated with Armstrong's Corkboard." Cork! Everybody knows corkboard insulation. And most people know Armstrong. "Surely," they say, "this equipment will serve more efficiently, more economically!"

* * *

What is back of this acceptance of corkboard as the finest insulating material? For one thing, there is Armstrong's thirty-year record. When you add the efficiency of LK Corkboard, its light weight, strength, resistance to moisture, and lasting service, you will see why it is preferred by so many equipment buyers.

Give your equipment the prestige of LK Corkboard Insulation. We will gladly send complete information, and samples for test. Write to Armstrong Cork & Insulation Company, 917 Concord St., Lancaster, Pa.



The Liquid Carbonic bar in Old Heidelberg Inn, at the Century of Progress Exposition, is insulated with LK Corkboard.

Armstrong's LK Corkboard Insulation

Efficient, Durable Insulation for Refrigerated Equipment

Air-Conditioning Directory Classified by Functions

SUMMER AND WINTER FUNCTIONS	Summer Functions		All-Year Functions		Winter Functions	
	REFRIGERATION	DEHUMIDIFICATION	CLEANING	CIRCULATION	HEATING	HUMIDIFICATION
Air Conditioning Engineers, Inc. "Ace" 2256 Reisterstown Road, Baltimore, Md.	Electric refrigeration	Cold water spray	Water spray	Blower	Steam	Water spray
American Blower Corp., 6000 Russell St., Detroit, Mich. Series "O"	Ice water or refrigerating machine	Cold surface		Sirocco fans	Hot water	
Series "R" Sirocco	Ice, tap water or electric refrigeration	Cold water surface	Bag filter	Sirocco fans	Hot water	Water spray atomizer
Industrial	Mechanical refrigeration (Central system)	Cold water spray	Water spray or filter	Fans	Steam	Water spray
American Furnace Co. "Afco Duo-Blo" 2719 Morgan St., St. Louis, Mo.	Electric refrigeration	Cold evaporator surface	Filter	Centrifugal blower unit	Warm air	Water spray
Air-Control Systems, Inc. "Zephyr Air" 2240 N. Racine Ave., Chicago, Ill.	Electric refrigeration	Cold finned core and cold water spray	Dense water spray	Blower type fan	Steam or hot water	Dense water spray
Autovent Fan & Blower Co. "Autovent" 1805 N. Kostner Ave., Chicago, Ill.	Electric refrigeration	Cold evaporator surface	Filter	Blower	Steam coil or furnace	Water spray
Buffalo Forge Co. "Buffalo Comfort Cooler" Buffalo, N. Y.	Electric refrigeration	Cold evaporator surface		Centrifugal fan	Steam coil	
Betz Unit Air Cooler Co., Inc. "Unicool" 6 W. Ninth St., Kansas City, Mo.	Ice or electric refrigeration	Cold water spray	Water spray	Fan	Steam or hot water	Water spray
Campbell Metal Window Corporation, Pershing Square Bldg., New York, N. Y. Campbell and Maxim Silencer	Electric refrigeration	Cold evaporator surface	Filter	Fan	Steam or hot water	Evaporation by heating water
Carrier Products Corp. 850 Frelinghuysen Ave., Newark, N. J. "Home Weathermaker"	Electric or steam ejector refrigeration	Cold evaporator surface	Filter	Blower	Warm air or steam	Spray
Continental Air Conditioning Co. "Kingly" 131 W. 21st St., New York, N. Y.	Electric refrigeration	Cold evaporator surface	Filter	Fan	Hot air	Evaporation by heating water
Conditioned Air Corp. "Airco" 7424 Melville Ave., Detroit, Mich.	Electric refrigeration	Cold evaporator surface	Filter and water spray	Blower	Steam or hot water	Water spray
Corozone Co. "DeLuxe Aquazone" 110 Hanna Bldg., Cleveland, Ohio	Puddling of water and use of ice	Copper refrigerant fins	Water current or spray	Fan		Evaporation by heating water
Dail Steel Products Co. "Dailaire" Lansing, Mich.	Electric refrigeration	Cold evaporator surface	Filter and water spray	Blower	Warm air	Water spray
De La Vergne Engine Co. "De La Vergne" Philadelphia, Pa.	Electric refrigeration	Cold evaporator surface	Filter	Fan	Reserving refrigeration cycle as heat pump	Evaporation and atomizing
Economy Baler Company, Ann Arbor, Mich. Health-Air Systems	Not furnished but can be used with refrigeration systems	Cold water spray if tap water is cold enough or refrigeration system is used	Water spray. Filter can be used in conjunction	Blower	Steam, hot water, or warm air	Water spray
The Edwards Mfg. Co. "Hot-Kold" Cincinnati, Ohio	Electric refrigeration	Cold evaporator surface	Filter	Centrifugal fan, dual speed	Warm air	Evaporation from heating water
Fox Furnace Co. "Sunbeam" Elyria, Ohio	Electric refrigeration	Cold evaporator surface	Filter	Blower	Warm air	Water spray
Frigidaire Corp. Dayton, Ohio	Electric refrigeration	Cold evaporator surface	Filter optional	Fan	Steam or hot water	Evaporation by heating water
A. Gehri & Co. "Silentair" Tacoma, Wash.	Ice	Cold surface	Filter and water spray	Blower	Warm air	Water spray
General Electric Company, Air Conditioning Dept., 120 Broadway, New York, N. Y.	Electric refrigeration	Cold evaporator surface	Dry filters	Blower	Steam	Hot water flowing over sets of screens
Grinnell Co. Providence, R. I. "Thermolier—Air Conditioning Type"	Electric refrigeration	Cold evaporator surface		Propeller fan	Steam	
Holland Furnace Company, Holland, Mich.	Electric refrigeration	Sprayed evaporator surface	Filter and water spray	Centrifugal blower	Warm air	Water spray
Ilg Electric Ventilating Co. "Ilg" 2850 N. Crawford Ave., Chicago, Ill.	Electric refrigeration or ice	Cold evaporator surface	Filter	Fan	Steam or electricity	Evaporation by heating water or patented wick principle
King Ventilating Co., Owatonna, Minn.	Electric refrigeration or ice	Spray	Water spray	Blower		Water spray
Kauffman Air Conditioning Corp. 4485 Olive St., St. Louis, Mo.	Electric refrigeration	Cold evaporator surface	Filter	Fan	Steam	Water spray
Lakeside Co. "Fairweather" Hermansville, Mich.	Electric refrigeration	Cold water spray	Filter and spray	Blower	Warm air	Spray
Lewis Air Conditioners, Inc., 829 Second Ave., South, Minneapolis, Minn.	Circulates ice water through heat absorber	Cold surface of heat absorber	Filters	Fan	Steam or hot water	
McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich. Convector	Circulates cold water cooled by electric refrigeration or ice	Cold evaporator surface	Moist surfaces	Fan	Hot water	
J. H. McCormick & Company, Williamsport, Pa. Airtrol	Electric refrigeration or cold water cooled by electric refrigeration or ice	Finned radiator surface	Filters	Fans	Steam	Wicks controlled by hydrostat or steam jets
L. J. Mueller Furnace Co. "Climator" 197 Reed St., Milwaukee, Wis.	Electric refrigeration	Cold evaporator surface or cold water spray	Filter and water spray	Blowers	Warm air	Water spray or automatic humidifier
National Korectaire Sales Co., 228 N. LaSalle St., Chicago, Ill. Korectaire	Ice or cold water from well or cooled by electric refrigeration	Cold dry evaporator surface and cold water surface	Impingement on moving water surface	Cone fan	Steam or hot water	Evaporation
Niagara Blower Company, 6 E. 45th St., New York, N. Y.	Electric refrigeration or ice	Cold evaporator surface or cold water spray	Filter and water spray	Fans	Steam	Water spray and evaporation by heating water
Parks-Cramer Co., Fitchburg, Mass. Parkspray Certified Climate	Electric refrigeration	Cold water spray or evaporator surface	Filter and water spray	Fan	Steam, hot water, warm air or electric heaters	Water spray
Premier Warm Air Heater Co., Dowagiac, Mich.		Cold water spray	Filter and water spray	Twin blowers	Warm air	Water spray
Rudy Furnace Co. "Bon-Air Conditioner" Dowagiac, Mich.			Filter and water spray	Blower	Warm air	Water spray
Servel Sales, Inc., Evansville, Ind.	Electric refrigeration	Cold evaporator surface	Filter	Blower	Steam	Water spray
B. F. Sturtevant Company, Hyde Park, Mass.	Electric refrigeration or ice	Cold evaporator surface or water spray	Filter or water spray	Fans and blowers	Steam, hot water vapor or warm air	Water spray and evaporation by heating water
The Trane Co. "Climate Changer" La Crosse, Wis.	Electric refrigeration, ice or cold water	Cold evaporator surface or cold water	Filter and water spray	Fan	Steam or warm air	Water spray
United States Air Conditioning Corp. 2131 Kennedy St., N. E., Minneapolis, Minn. Kooler-Aire, Arctic Nu Air and Balmi-Aire	Electric refrigeration	Cold water spray when and as required	Water spray or flooding nozzles	Centrifugal fan	Steam, hot water or warm air	Water spray
Westinghouse Electric & Mfg. Co. East Pittsburgh, Pa.	Electric refrigeration	Cold evaporator surface	Filter	Fans	Steam	Water spray
The Williamson Heater Company, 337 W. 5th St., Cincinnati, Ohio DeLuxe Comfort System	Electric refrigeration or ice	Cold evaporator surface	Adhesive type filters	Centrifugal blowers	Warm air	Automatic drip humidifier
X L Refrigeration Co., Inc., 1834 W. 59th St., Chicago, Ill. Hilger	Electric refrigeration	Cold water or brine spray	Water spray	Fans	Steam	Water spray
York Ice Machinery Corporation, York, Pa.	Electric refrigeration	Cold evaporator surface or water spray	Water spray and filter	Fans through ducts or direct	Duplex cooling and heating surface	Mist-type humidifier
SUMMER FUNCTIONS						
Audiffren Refrigerating Machine Co. 227 Colden St., Jersey City, N. J.	Electric refrigeration	Cold evaporator surface	Filter	Blower		
Baker Ice Machine Co., Inc. "Baker" 1522 Evans St., Omaha, Nebr.	Electric refrigeration	Cold evaporator surface	Filter or spray	Blower		
Barrett Regulation Engineers Co. "Breco" 1322 Warrensville Center Rd. Cleveland Heights, Ohio	Ice	Cold surface	Wet moving belts	Fan		
Buffalo Forge Co. Buffalo Floor-Type Cooler	Electric refrigeration	Cold evaporator surface		Centrifugal fan		
Buffalo "Buffalo Suspended Unit Cooler"	Electric refrigeration	Cold evaporator surface		Propeller fan		
Carrier Products Corp. 850 Frelinghuysen Ave., Newark, N. J. "Room Weathermaker"	Electric refrigeration	Cold evaporator surface	Filter	Blower		
"Carrier Comfort Cooler"	Ice	Cold surface		Blower		
Chicago Pump Co. "Northern Breeze" 2336 Wolfram St., Chicago, Ill.	Ice	Cold surface of fin-type radiator	Water	Blower		Evaporation by heating water
ChilAire Corporation, 3115 Troost Ave., Kansas City, Mo.	Ice	Cold absorber surface	Water spray	Sirocco type fan		
H. S. Kaiser Co. "IceAir & Kaiserair" 936 W. Chicago Ave., Chicago, Ill.	Ice	Ice surface	Filter	Fan		
Lewis Air Conditioners, Inc., 829 Second Ave., South, Minneapolis, Minn.	Ice	Cold surface		Fan		
Kelvinator Corp. "Kelvinator" 14250 Plymouth Road, Detroit, Mich.	Electric refrigeration	Cold evaporator surface	Filter, washed by condensate	Two centrifugal fans		
Marlo Electric Corporation, 5241 Botanical Ave., St. Louis, Mo.	Electric refrigeration	Cold evaporator surface	Filter	Blower type fan		
Modine Mfg. Co. "Ice Fan" Racine, Wis.	Ice	Ice surface		Fan		
Motors Metal Mfg. Co. "Komforte Koolaire" 5936 Milford Ave., Detroit, Mich.	Ice	Cold ice surface		Fan		
Pure-Aire Corp. "Pure-Aire" 7 S. Cicero Ave., Chicago, Ill.	Ice or electric refrigeration	Cold evaporator or ice surface	Water spray	Fan		Water spray
Scott-Newcomb, Inc. "Pioneer Room Cooler" 1947 Pine St., St. Louis, Mo.	Electric refrigeration	Cold evaporator surface		Fan		
Standard Engineering Works, 4343 Duncan Ave., St. Louis, Mo. Kool-A-Room	Ice	Cold copper fins	Bag filter	Sirocco fans		
Strang Air Conditioning Corp. Commerce Bldg., Kansas City, Mo.	Electric refrigeration	Cold evaporator surface		Fan		Water spray
Universal Cooler Corp., 7424 Melville Ave., Detroit, Mich.	Electric refrigeration	Cold evaporator surface	Filter and water spray	Fan		
The Vilter Manufacturing Company, 2234 S. 1st St., Milwaukee, Wis.	Mechanical refrigeration	Cold surface		Fan		
Wepaco Steel Products Co., Blue Island, Ill. Roto Cold	Ice	Cold surface of ice container	Wet ducts	Fan		
Young Radiator Co. Racine, Wis.	Electric refrigeration or ice	Cold evaporator surface		Blower		

WINTER FUNCTIONS	Summer Functions		All-Year Functions		Winter Functions	
	REFRIGERATION	DEHUMIDIFICATION	CLEANING	CIRCULATION	HEATING	HUMIDIFICATION
Bryant Heater & Mfg. Co. "Dualator" 17825 St. Clair Ave., Cleveland, Ohio			Filter	Large volume fan	Steam condenser	Heating water in pan
Forest City Foundries Co. "Niagara" 2500 W. 27th St., Cleveland, Ohio				Blower	Warm air	Direct evaporation
Green Foundry & Furnace Works "Colonial" Des Moines, Iowa			Filter or spray	Blower	Warm air	Evaporation
Hess Warming & Ventilating Co., 1211-17 S. Western Ave., Chicago, Ill.			Filter	Centrifugal blower	Warm air	Wire mesh wheel breaks up water into fine spray
Home Furnace Company, Holland, Mich.			Filter and water spray	Blower	Warm air	Water spray
International Heater Co. "Economy" 101 Park Ave., Utica, N. Y.			Filter or spray	Blower	Warm air	Water spray or evaporation of heating water
W. E. Kautenberg Co., Freeport, Ill. Marvel				Fan	Electric heating wire	Evaporation by heating water
Lennox Furnace Co. "Aire-Flo" Marshalltown, Iowa			Filter and water spray	Blower	Warm air	Water spray by whirling disc
Motor Wheel Corp. "MW Weather Control" Lansing, Mich.			Filter or water spray	Blower	Warm air	Evaporation by heating water
Pennsylvania Furnace & Iron Co. Warren, Pa.			Filter	Blower	Warm air	Evaporation by heating of water
Perfection Stove Co. "Superfex" 7609 Platt Ave., Cleveland, Ohio			Filter	Blower	Oil-burning air circulating system	Evaporation of water
Robinson Furnace Co. 213 W. Austin Ave., Chicago, Ill.			Spray and filter	Blower	Warm air	Spray
George D. Roper Corp. "Roper" Rockford, Ill.			Filter	Fan	Hot air	Evaporation by heating of water
Security Stove & Mfg. Co. 1630 Oakland Ave., Kansas City, Mo.			Filter	Fan	Hot air	Spray
Thatcher Co. Newark, N. J.			Filter and water spray	Blower	Hot air	Water spray
Waterman-Waterbury Co. "Comfortrol" Minneapolis, Minn.			Filter and water spray	Fan	Warm air	Water spray
Wood Hydraulic Hoist & Body Co. 7924 Riopelle St., Detroit, Mich. "Gar Wood"			Filter and water spray	Blower	Steam or warm air	Water spray and evaporation of heating water

40 Manufacturers Adopt Standard Air-Conditioning Definitions

CHICAGO—A new set of definitions of complete, winter, and summer air-conditioning equipment was agreed upon by 40 manufacturers of air-conditioning equipment in a recent meeting arranged here by Newell-Emmett Co., Inc., advertising agency of New York City, according to R. K. Jones of the agency.

These definitions are published below in this column. It was further decided that equipment designated as either complete, winter, or summer air-conditioning equipment must perform these functions to provide related control within certain standards.

Another subject brought up was certification of equipment by manufacturers for the benefit of the purchasing public. Certification was divided into technical codification which the manufacturer would follow in building equipment, and certification to the purchaser that the equipment would properly perform the functions for which it was bought.

It was pointed out that machinery is already set up for technical codification or certification, with organizations such as American Society of Heating and Ventilating Engineers, American Society of Refrigerating Engineers, American Society of Mechanical Engineers, National Electrical Manufacturers Association, and National Warm Air Heating Association already providing machinery to set up technical standards.

Discussion uncovered the great complexity of any plan to certify performance to a purchaser. It was suggested that after contractors' plans for an air-conditioning installation had been completed, they might be presented to an association for examination, checking, etc.

Definitions agreed upon by the 40 manufacturers present were:

Complete air-conditioning equipment is that which provides simultaneous control of temperature, humidity, air motion, and cleaning within an enclosure throughout varying seasons.

Winter air-conditioning equipment provides simultaneous control of temperature, humidity, air motion, and purification within an enclosure in the winter months.

Summer air-conditioning equipment provides for simultaneous control of temperature, humidity, air motion, and purification during the summer months.

All of the above functions must be performed to provide related control within the limits set down in the Report of the American Society of Heating & Ventilating Engineers Committee on Ventilating Standards.

No manufacturer, or dealer, shall have the right to use the term "Air Conditioning", "Summer Air Conditioning", or "Winter Air Conditioning", unless the equipment offered provides the functions outlined above within the standards provided for. For instance, equipment which provides humidification alone must not be described by the term "Air Conditioning." It shall be called humidification equipment or some similar defining term.

FEE & STEMWEDEL MAKE 'AIRGUIDE'

CHICAGO—Fee & Stemwedel, Inc., here is manufacturing an instrument for indicating the condition of the air in a room. Called the "Airguide," the device has a round face on which are two dials—one to register the temperature, and the other the percentage of relative humidity.

Airguide has a modernistic case of black and chromium.

George D. Roper Builds Central Systems

ROCKFORD, Ill.—Heating, cleaning, humidifying, and circulation of the air are provided by the air-conditioning equipment being manufactured by the George D. Roper Corp. of this city.

Heart of this system is the Roper gas-fired warm air furnace, equipped with a motor-driven blower to circulate the air. The humidifier is a porcelain-enameled pan.

Manufacturers of Humidifiers

The following companies manufacture equipment which provides for humidification:

American Machine Products Co. "AmPeCo" Marshalltown, Iowa

American Radiator Co. "Ideal Cascade" 40 W. 40th St., New York, N. Y.

Automatic Humidifier Sales Co. "Humidrip" 6560 Cass Ave., Detroit, Mich.

Clements Mfg. Co. 6650 South Narragansett Ave., Chicago, Ill.

Emerson Electric Mfg. Co. 2018 Washington Ave., St. Louis, Mo.

Gilbert Co., A. C. "Airifier" New Haven, Conn.

Hexcel Radiator Co. "Control-air" 57 Erie St., Milwaukee, Wis.

Murray & Nickell Mfg. Co. "Murnick" 2608 Arthington Blvd., Chicago, Ill.

Norge Corp. "Norge Air Conditioner" 670 E. Woodbridge St., Detroit, Mich.

Swartzbaugh Mfg. Co. "Klenzair" 1336 W. Bancroft Ave., Toledo, Ohio

Timken Silent Automatic Co. "Airlux" 100 Clark St., Detroit, Mich.

Wilcolator Co. 17 Nevada St., Newark, N. J.

Westinghouse Electric & Mfg. Co. East Pittsburgh, Pa.

Workrite Specialty Co. 3129 N. 28th St., Milwaukee, Wis.

LARKIN *Humi-Temp* UNITS *at the* FAIR AT CHICAGO

Now Over 40,000 Larkin Coils in Daily Use

LAST week we invited your inspection of a giant cooler 102'x9'x7' refrigerated by a Williams Ice-O-Matic Compressor and four LARKIN *Humi-Temp* COIL UNITS at the Victor Vienna Garden Cafe at A Century of Progress.

Other World's Fair Williams installations, with LARKIN *Humi-Temp* UNITS, include the Chas. Mueller Schlitz Garden Restaurant and the Live Stock and Meat Exhibit where meat in all stages from animal to table is exhibited under refrigeration.

See these practical demonstrations of *Humi-Temp* performance when in Chicago. Let us send you complete data.

Humi-Temp Units are Ideal For Beer Cooling

LARKIN Refrigerating Corporation

Originator and Manufacturers

ATLANTA, GA., U.S.A.

WAREHOUSES
Brooklyn - Chicago

100% VERTICAL SURFACE

U.S. PATENT No. 1,776,238.

LARKIN COILS

Sit in your CUSTOMER'S PLACE

Get a new view of the words: "Insulated with Corkboard!"

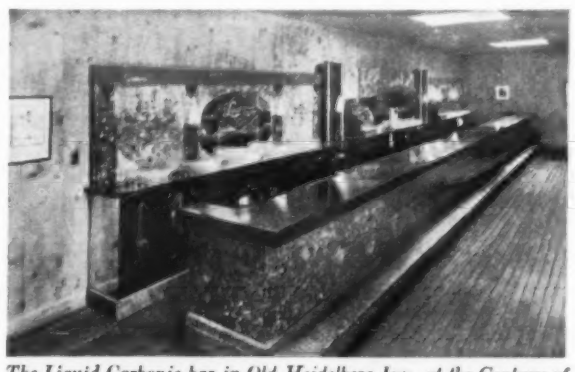
STEP out of your present rôle. Sit down, just once, in the place of the man who *buys* refrigerated equipment. Remember, you're interested now only in how the equipment performs.

Listen as the salesman says: "This equipment is insulated with Armstrong's Corkboard." Cork! Everybody knows corkboard insulation. And most people know Armstrong. "Surely," they say, "this equipment will serve more efficiently, more economically!"

* * *

What is back of this acceptance of corkboard as the finest insulating material? For one thing, there is Armstrong's thirty-year record. When you add the efficiency of LK Corkboard, its light weight, strength, resistance to moisture, and lasting service, you will see why it is preferred by so many equipment buyers.

Give your equipment the prestige of LK Corkboard Insulation. We will gladly send complete information, and samples for test. Write to Armstrong Cork & Insulation Company, 917 Concord St., Lancaster, Pa.



The Liquid Carbonic bar in Old Heidelberg Inn, at the Century of Progress Exposition, is insulated with LK Corkboard.

Armstrong's LK Corkboard Insulation

Efficient, Durable Insulation for Refrigerated Equipment

AIR-CONDITIONING INSTALLATIONS

AIR-CONDITIONED CAR IN PULLMAN EXHIBIT

CHICAGO—On exhibit at A Century of Progress here is a 79-ft. aluminum observation coach which weighs only 73,800 lbs. and is equipped with a 6,880-lb. air-conditioning system designed by the Pullman Car & Mfg. Corp. of this city.

When the car is on the road, the compressor will be driven directly from the car's axle; when the coach is not moving, a.c. current at the station or yards will be utilized to drive the compressor.

Coach and lounge sections of the car will be supplied with cooled air through a grille at one end of each division. Fresh air is taken in at the side of the deck, and is filtered before being cooled. Air to be recirculated will leave the car through an exhaust grille and filter in the top of the passageway.

Heating coils are located near the evaporators of this air-conditioning system, and will be utilized in the winter to supply most of the heat for the car. Several floor-type heating coils will be used to warm the air in the lower part of the car.

Wherever possible, aluminum has been used in construction of the air-conditioning system, the manufacturer points out. Control of the system is automatic.

NEW APPLICATION

EAST PITTSBURGH, Pa.—Air-conditioning equipment to eliminate odors from refuse awaiting the city collector, is the oddest job yet given to the new Westinghouse units, but an installation for that purpose has been made in the palatial Shoreham hotel in Washington. Contract for the equipment was placed with Wm. E. Kingswell, Inc., Westinghouse dealer in the capital.

120 Ilg Systems Now Operating Over 2 Years

CHICAGO—Ilg Electric Ventilating Co., with headquarters here, now has installed in various parts of the country more than 120 mechanical cooling systems which have been in service for two seasons or more, according to J. M. Frank, president of the organization.

Among recent installations of Ilg space-cooling equipment is that of a 9-ton system in the Clark restaurant at Cleveland Heights, Ohio. The Clover Leaf Coffee Shop in Cleveland has just installed a 10-ton Ilg system, and in San Antonio a 24-ton system has been placed in the brokerage office of J. S. Bache & Co. The Stay Form Co. in Chicago has purchased a 2-ton job.

At A Century of Progress, Ilg equipment is in use in the Brick Manufacturers Association home. In the living room of this house is a 1-ton cabinet-type cooling unit, while the bedroom is equipped with an Ilg Spot Kooler.

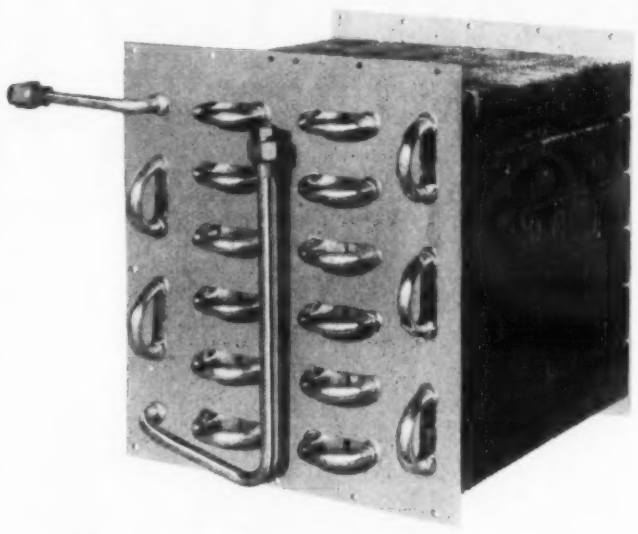
In the 26-seat theater of the Household Finance Corp. at the World's Fair—said to be the smallest movie house in the world—is another Ilg cooling system. The glass-enclosed exhibit room of the Kraft Phenix Cheese Co. is cooled by a 4-ton Ilg-Kold system.

An Ilg Spot Kooler cools the model refrigerator car displayed at the fair by the General American Transportation Co.

The Ilg company has had best sales volume this season on its self-contained Spot Kooler, which has a .55-ton rating.

The department manufacturing this unit is at present running seven days per week, and is 50 orders behind, according to Mr. Frank.

Various units in the Ilg air-conditioning line have been described in past issues of ELECTRIC REFRIGERATION NEWS.

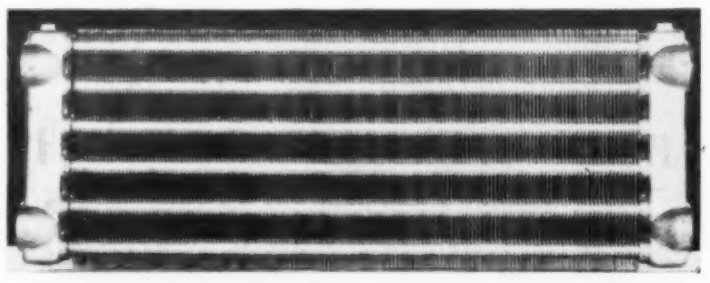


Fin Coils for Air Conditioning

The Bush Mfg. Co. facilities are such that both cooling and heating coils can be supplied either of standard Bush finned tubing or entirely to specification.

Our standard specification sheet shows 38 combinations of fin and tube sizes and fin spacings.

Whether your requirements are small or large, special or standard, Bush would like to work with you on any units calling for finned tubing.



THE BUSH MANUFACTURING CO.
HARTFORD, CONN.

3 DRUG STORES BUY FRIGIDAIRE COOLERS

By Phil B. Redeker

DETROIT—The Economical & Cunningham Drug Co., Inc., through its president Nate Shapiro, has announced the installation of Frigidaire air-conditioning systems in three of its stores here.

Installation of the equipment was made under the supervision of E. E. McEwan, air-conditioning manager of the Detroit branch, Frigidaire Sales Corp.

Mr. Shapiro became interested in the possibilities of air conditioning for his chain of drug stores about a year ago through a "cold canvass" call by a Frigidaire air-conditioning salesman.

In one of the stores, claimed by Mr. Shapiro to be the "world's largest drug store," a duct system is installed, while in the other two stores the Frigidaire "store-type" or overhead air-conditioning unit is employed.

10-Hp. Compressor

The new 10-hp., 4-cylinder Frigidaire compressors, employing freon, are furnishing the refrigerating effect for both types of installations.

Because of the nature of the layout of the "world's largest drug store" (the store is built around a corner, the two wings meeting at right angles) the installation consists of two individually operated duct systems. A third section of the store, apart from the two wings, is handled by an overhead unit.

Distributed by Blower

The duct systems accomplish cooling and dehumidification of the air by means of direct-expansion coils in the air-conditioning chamber. A blower system distributes the air.

Both the main floor and balconies in the two wings are air conditioned by the duct systems. The two systems together supply a total of 35 outlet ducts with cooled, dehumidified air. Temperature conditions are regulated by means of thermostatic controls. About six air changes per hour are produced by the blower system.

'Package' Type Cooler

The entire installation, including the "cutting in" of the grille work in the walls, was made without once interrupting the store's operation, Mr. McEwan states.

The "store-type" conditioner used in the small section of the big store and in the two other stores, consists of a package unit, which includes coil, blowers, and a motor. Each unit has two fans of the multi-blade centrifugal type, driven by a 1/5-hp. motor, which forces air through the diffuser nozzles at the rate of 1,500 cu. ft. per minute.

FILTRINES USED IN COOLING G. E. HOUSE OF MAGIC

CHICAGO — Installed in General Electric Co.'s "House of Magic" theater at A Century of Progress here is an air-conditioning plant powered by 10 3-hp. General Electric condensing units and equipped with 10 Filtrine model M-150-R water coolers. The system supplies a total of approximately 20 tons of refrigeration.

Control of the refrigerating machines and Filtrine coolers is such that only as many condensing units are in operation at one time as are required to maintain temperatures at a predetermined level, according to C. F. Hansel of the Filtrine Mfg. Co.

Dehumidification Measured on Dailaire; Cooling Load Schedule Developed

LANSING, Mich.—Engineers of the Dail Steel Products Co. have just finished compilation of data obtained on a test made last month with a Dailaire Conditioner to determine the Dail unit's efficiency in dehumidifying the air, according to E. J. Dail.

The tests were run June 16 in a newly constructed Lansing home. Three rooms having a total volume of 8,500 cu. ft. were cooled by a system composed of a 3-ton methyl chloride compressor operating at 18-lbs. gauge pressure, and circulating refrigerant through fin-type coils having a surface area of 6.4 sq. ft.

Sixteen hundred cu. ft. of air per minute were passed through the coils. The register temperature was 65°. Cooling load was estimated at 23,800 B.t.u., and the rated capacity of the Dailaire unit was 4.46 tons at 40° water temperature.

Rooms cooled were a large living room facing the east, a somewhat smaller dining room facing the south, and a sun room with windows at the south and west, according to Mr. Dail.

The conditioner was in the basement of the home, cooled air being supplied to each of the three rooms through a rectangular duct. Return air was taken from the living room and from the hall outside the dining room. Supply grilles in each room were located under the steam radiators.

First reading was made at 4 p. m., and outside conditions were found to be as follows: dry bulb temperature, 88° F.; wet bulb temperature, 78° F.; dew point, 74.5°; relative humidity, 63 per cent. Inside readings was: dry bulb, 84° F.; wet bulb, 75° F.; dew point, 71.5°; relative humidity, 65 per cent.

After the machine had been in operation one hour, readings were again made. Outside condition was practically the same as at 4 p. m., says Mr. Dail, but the inside reading showed a dry bulb temperature of 79° F., wet bulb of 69° F., a dew point of 64°, and a relative humidity of 60 per cent.

The heat content of the outside air was 36.45 B.t.u. per lb. of air, and the heat content at 5 p. m. inside the rooms was 28.93 B.t.u. per lb., showing a reduction of 7.52 B.t.u. per lb., Mr. Dail states.

"At 1,600 c.f.m., 5,661 lbs. of air were passed over the coils during this time, thus showing an actual absorption of heat of 42,600 B.t.u. per hour, or 3.55 tons of refrigeration.

"Condensation was also measured, showing 55 c.c. per minute, or 3.6 qts. per hour."

Other tests are to be made in the near future, according to Mr. Dail. In them, water cooling will be used instead of electric refrigeration.

The complete Dailaire Conditioner performs all functions of air conditioning. Air is taken in at the bottom of the unit, where it passes through a bronze wool filter and water spray, and then over the cooling coils (in the summer). It is then blown through ducts to the various rooms of the house by centrifugal blowers at the top of the furnace.

The Dail company manufactures a conditioning unit for steam-heated homes, and a unit for connection to a warm air furnace. Heart of the Dail conditioning system is the company's furnace—available for use with oil, gas, or coal. Various parts of the complete air-conditioning system are made as separate units, and may be purchased separately, according to the manufacturer.

For figuring the cooling requirements of a building, and the necessary refrigeration, Dail salesmen are furnished with a schedule of cooling load factors which vary with the construction of the building, according to H. B. Huffaker, engineer.

These coefficients are based on an outside temperature of 95° F. dry bulb, 75° F. wet bulb, 38 per cent relative humidity, a 66° dew point, and a wind of 15 miles per hour, with inside conditions reduced to 80° F. dry bulb, 67° wet bulb, 50 per cent relative humidity, and a 60° dew point, he said.

The estimating sheet follows:

Estimate of Cooling Load for Air-Conditioning Installation

Prospect ..... Date.....
Type of business .....
Dimensions: ...Wide:...Long:...High:...

		B.t.u. Per Hr.
Square feet of wall surface:		
Plain brick wall	Sq. ft. x 5.4	=
Brick wall + air space + lath and plaster	Sq. ft. x 3.75	=
Wood wall or floor	Sq. ft. x 3.75	=
Hollow tile plaster	Sq. ft. x 4.45	=
Square feet of partition or inside wall:		
Partition to kitchen	Sq. ft. x 5	=
Inside wall to other space	Sq. ft. x 2.5	=
Square feet of ceiling:		
Flat roof exposed	Sq. ft. x 12	=
Ceiling attic space above	Sq. ft. x 7.5	=
Ceiling occupied space above	Sq. ft. x 3.75	=
Windows: No awnings—exposed to sun		
Single	Sq. ft. x 136.5	=
Double	Sq. ft. x 127.5	=
Windows: Awnings—not exposed to sun		
Single	Sq. ft. x 16.5	=
Double	Sq. ft. x 7.5	=
Electric lights: Number..x watts per lamp..	x 3.42	=
People: Number	x 385	=
Gas burners: Number	x 3500	=
Infiltration:		
	Cu. ft. space x .388	=
Outside air: Number of people	x 466	=
Total Refrigeration = Total B.t.u. Per Hr. Divided by 12,000		= ..... Tons

Kelvinator Devoting This Season to Education

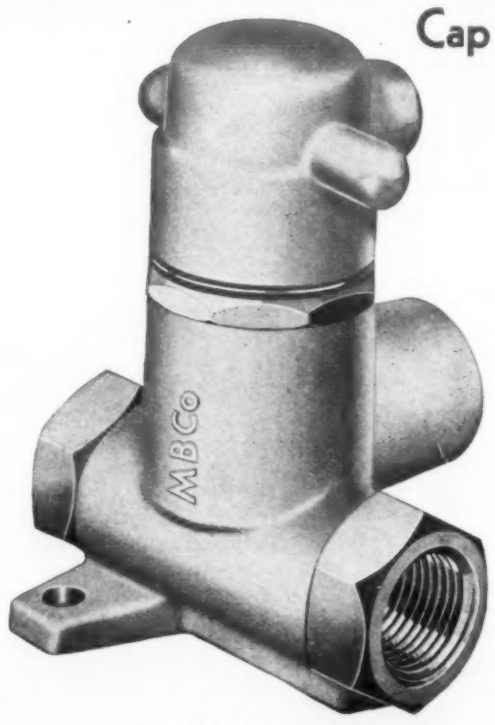
DETROIT—Believing that its new line of unit air conditioners offers an extensive new application of Kelvinator electric refrigeration, but one which requires highly intelligent installation service, Kelvinator Corp. is proceeding slowly with its merchandising plans for air conditioning, and is giving commercial salesmen intensive training courses in this equipment.

Because of the fact that the new Kelvinator conditioners embody a number of departures from the conventional room cooler type of unit, the company has decided to spend the major portion of this first year in training salesmen in the principles of air conditioning and in getting first-hand information as to the performance of its product under various climatic conditions.

Chief feature of the new Kelvinator air conditioners is their ability to offer automatic and independent control of both humidity and temperature. Air is filtered, cooled, washed by the condensate from the coils, and dehumidified. The rate of dehumidification is controllable.

MUELLER Double-Packed Operating Valve with Seal Cap and Integral Operating Wrench

FOR HEAVY DUTY



AY-13181 Code-Sturbig

This valve is the answer to the need for an extra sturdy valve for large commercial installations and for air-conditioning work.

Its openings are FULL FLOW, assuring unrestricted passage of the refrigerant up to and including 5/8" O. D. diameter tubing.

It is double-packed and incorporates the back-seating feature. The body, which is extra heavy, and the seal cap are of forged brass; the stem is of Tuf-Stuf, a corrosion resisting alloy of great strength. The mounting plate is integral with the body.

The packing is not affected by heat or any other of the refrigerants in general use and may be replaced with the valve under pressure without loss of refrigerant or interruption of service.

Note—Mueller AY-13181 is one of the new line of full flow valves, *fully described and illustrated in our new catalog, R-2. Send for your copy.*

Mueller Brass Co.
PORT HURON, MICHIGAN

Mueller Brass Co. Valves and Fittings are approved by the Underwriters' Laboratories of Chicago

We manufacture a complete line of valves and fittings and can supply your every requirement

NEW ROOM COOLERS

8 Models Included in Air Conditioning Line Produced by Westinghouse

EAST PITTSBURGH, Pa.—Eight different models make up the line of commercial refrigeration units which the Westinghouse Electric & Mfg. Co. is producing for use in installations of its own unit air-conditioning systems.

All models have compressors of the vertical, two-cylinder, single-acting type. Both intake and discharge valves on all models are mounted in the head, instead of in reciprocating parts, to avoid flow of refrigerant through the crankcase. Low inertia-type valves are used.

Cylinder head in each model is made of semi-steel and is air cooled. The cylinder block is also cast from semi-steel. Each piston is ground to size and fitted with two compression rings and one oil control ring. The connecting rods are of drop forged steel, as is the counter-balanced crankshaft.

Oil Separator

All models have an oil separator which extracts oil picked up by the refrigerant from the cylinder walls, and returns it to the crankcase. All but the two models designed for use with direct and 25-cycle current have an automotive-type oil pump, operating at 40 lbs. per sq. in. pressure, and rifle drilled connecting rods, which give forced lubrication to all bearing surfaces including piston pins and cylinder walls.

The seal used is of the copper bellows type, with anti-friction metal seat, held against a shoulder on the crankshaft by a spring. A complete motor control is mounted in a small box, and includes a thermal overload protection with hand reset. All models have a high pressure cut-out, and a fusible safety plug. Service valves are of drop forged brass, and are of the packless type.

Air-Cooled Models

Models RA-1 and RA-2 are air-cooled units operating on 50- or 60-cycle, single-phase or polyphase current. In either model, the compressor block, crankcase, and motor frame are cast in one piece, there being no belt. The crankshaft carries the motor rotor and condenser fan.

The motor is of the capacitor type for single phase, and squirrel-cage type for polyphase. The liquid receiver is cast integral with the base and fitted with a strainer. Air-cooled condenser is of the finned tube type.

RA-1 has a 1¾-in. bore, a 1⅜-in. stroke, and is charged with 19 lbs. of F-12 and 4½ pts. of oil. When equipped with a 50-cycle motor, the latter makes 950 rpm. and develops 2 hp. A 60-cycle motor makes 1,160 rpm., and also develops 2 hp.

Model RA-2 has a bore of 2⅛ in., and a stroke of 1⅞ in. It has 25 lbs. of refrigerant (F-12), and 5 qts. of oil. Motor speeds are the same as for model RA-1, but the 50-cycle motor used is a 3-hp. unit, as is the 60-cycle unit.

Machines Cooled by Water

Units No. RW-1 and RW-2 are water-cooled machines with the compressor block, crankcase, and motor frame cast in a single piece. The crankshaft carries the motor rotor, and the body of the oil separator is cast integral with the cylinder head.

The liquid receiver on these models is an integral part of the cast-iron base, and is fitted with a strainer; the condenser is an integral part of the liquid receiver. Water valve is automatic.

RW-1 has the same bore, stroke, refrigerant and oil charge as RA-1 already described, but has a 50-cycle motor developing 1½ hp., and a 60-cycle motor of like rating.

RW-2 has the same specifications as its companion model, RW-1, but develops 2 hp. with its 50-cycle motor, and 3 hp. with its 60-cycle unit.

Powered by Direct Current

Two other models are Nos. RW-1 and RW-2 for direct or 25-cycle current. They have forced feed to all bearings, including the piston pins. A standard motor, direct-connected to the crankshaft is used in these models. The liquid receiver is a welded tank fitted with a strainer and mounted in the structural steel base.

The water-cooled condenser is an integral part of the liquid receiver. RW-1 has a 1¾-in. bore, a 1⅜-in. stroke, 19 lbs. of refrigerant (F-12), and 4½ pts. of oil. The unit may be used with a d.c. motor developing 1½ hp., or with a 25-cycle motor having 1 hp.

RW-2 has a bore of 2⅛ in., a stroke of 1⅞ in., contains 25 lbs. of F-12, and 5 pts. of oil. When equipped with a d.c. motor, the latter develops 3 hp., while a 25-cycle motor has only 2 hp.

Larger Capacities

Other two models of this group are RW-4 and RW-6, which are water cooled, and have a 3-in. bore and stroke. On either model, the motor is of the standard type and is directly connected to the crankshaft. The liquid receiver is a welded tank mounted in the structural steel base. The condenser is an integral part of the liquid receiver. Water valve is automatic.

The 60-cycle motor which may be used with RW-4 develops 860 rpm. and 5 hp., while the 50-cycle motor adaptable to this model develops 720 rpm., and 5 hp. The 25-cycle motor has the same speed and horsepower as the 50-cycle unit.

A 60-cycle motor developing 1,150 rpm. and 7½ hp. or a 50-cycle motor developing 870 rpm. and 7½ hp. may be used with model RW-6, according to the manufacturer.

Two Floor-Type Units

Two floor-type cooling units are being manufactured by Westinghouse, and may be used for the six prime functions of air conditioning. Model EL-12, available in walnut or Micarta panel finish, is designed for installation under a window or along a wall, and is constructed to permit introduction of outside air through a duct, if desired.

Model EH-12, available in the same two finishes, is finished on all four sides of the cabinet, and may be placed against a wall or in any open space. It does not permit introduction of outside air. Both models will circulate approximately 450 cu. ft. of air per minute. Westinghouse also has four sizes of suspended-type conditioning units in production.

SERVEL LINE RANGES FROM 1 TO 5 TONS

EVANSVILLE, Ind. — Now being manufactured by Servel, Inc., here, and distributed through its refrigeration sales organization is a line of equipment for comfort cooling on installations requiring from 1 ton to 5 tons of refrigerating effect, according to F. E. Sellman, vice president.

Standard installations consist of regular Servel compressors of the water-cooled type, connected to direct-expansion, forced-convection units. For simple installations, a single ½-ton machine and convector unit are installed in much the same way as standard refrigerating apparatus.

When two or more rooms are to be connected to one machine unit, a special system of multiple hook-up, having individual control on the various convectors, is utilized, says Mr. Sellman.

Where space is not at a premium the radiator type of cooling unit is most often used, he explains. The units themselves are provided with ducts which may be connected under windows or to other sources of fresh air for mixture with the recirculated air when necessary.

Several models are also available with heating coils which can be connected to steam or circulating hot water for heating and humidifying in winter. If comfort cooling is taken into consideration in the design of a building, Servel suspended-type comfort units can be built into ducts in the walls with air grilles provided for the return of the warm air.

In making estimations for comfort cooling requirements, Servel engineers adhere strictly to the leakage rate compiled by the A.S.H.V.E., with provisions for circulating approximately 1,000 cu. ft. of fresh air per hour for each occupant, whenever the conditioned space contains more than one person per 1,000 cu. ft., Mr. Sellman says.

Servel also recommends that its men base all installations on a coil temperature of 37° F., with sufficient recirculating units to insure adequate reduction of humidity in addition to a reduction of sensible temperature.

Insofar as is possible the company maintains factory control of all air-conditioning installations at the present time. Distributors and dealers are asked to submit their surveys and plans to the factory before ordering any material to be used for air conditioning. Exception is made for those organizations having specially trained engineers in their employ.

Service Engineers

The factory maintains a force of traveling service engineers who assist and supervise in the installation of Servel air-conditioning equipment, whenever possible.

One estimation factor to which Servel engineers give much attention is that of the ventilating allowance, which in many installations will be the source of 70 per cent of the total load, especially in climates experiencing a high relative humidity during warm weather, Mr. Sellman states. "With a low density of population the accidental air infiltration around windows, doors, etc. can be safely estimated at one to two changes per hour, which is sufficient for a population density of one person per 1,000 cu. ft." he says.

"In places where the population density may run as high as 20 persons per 1,000 cu. ft., some type of forced ventilation must be employed, and the air must be changed with sufficient frequency to insure against the accumulation of food odors, body odors, or tobacco smoke contamination.

"Presuming that the estimator does take into account the proper air change, there is still a possibility of error in determining the total heat to be extracted from a given volume of air unless he makes a careful investigation concerning the maximum probable outside temperature and humidity at the time of day when his peak load will occur," Mr. Sellman asserts.

He says that Servel air-conditioning engineers also place great importance upon the factor of radiant sun effect. "A flat or nearly flat tar and gravel roof exposed to sun from south or west with a low unventilated attic intervening between the roof and the conditioned space, may be responsible for a heat leakage approximating 10 times that to be expected from an ordinary outside wall on the same side of the building," he says.

Where the installation engineer is confronted by the problem of an extremely hot attic, Servel recommends that ventilators be installed, and in a few cases that forced-ventilating systems be installed, connected in parallel with the cooling system. This is to insure that attic temperatures will not rise materially above outside temperatures.

Effect of Cooking Equipment

Servel engineers point out that in restaurants and grill rooms there is an increasing tendency to bring more of the food-preparing equipment into the dining room in sight of the customers.

This practice, they say, loads the air-conditioning system with steam tables, coffee urns, toasters, waffle irons, etc. and although the prospect may insist that this is necessary every effort should be made to get such equipment isolated from the conditioned space by use of glass partitions and a separate ventilating system.

Few if any restaurant operators, the engineers insist, can afford to pay the gas utility $1.50 for 1,000 cu. ft. of gas to heat their cooking appliances and then reverse the process by paying the electric utility $2.50 to $3.00 to remove this heat from the conditioned space.

KING MANUFACTURES LINE OF WASHERS, HUMIDIFIERS

OWATONNA, Minn.—King Ventilating Co. of this city is manufacturing a line of units designed to wash, humidify, and circulate the air in homes or commercial establishments, and to cool and dehumidify the air when electric or ice refrigeration are used in conjunction with the air washer.

In operation, the King unit draws air into and through a water spray, then forces it into the room by means of a motor-driven blower.

Water for cooling and dehumidifying must be piped to the unit, but when these two functions are not desired, water is merely placed in a tank which forms the bottom of the spray chamber, and a small pump forces this water through spray nozzles to wash and humidify the air.

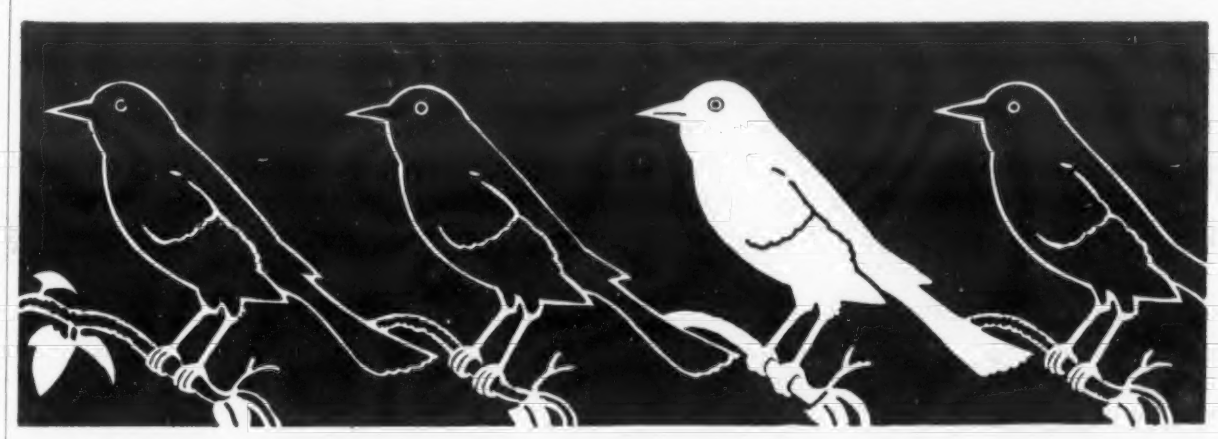
Two types of units are being manufactured by the King company, according to Frederick Gallaher, general manager of the organization. One is an upright type for installation in walls, recesses, etc., where space economy is necessary, while the other is of the horizontal type and may be suspended from ceilings, installed in basements, or located in the rear of some establishments.

The upright units are available in models which will supply ¾ tons and 1½ tons of refrigeration per 24 hours, when connected to electric refrigeration equipment or ice tanks of sufficient size. The horizontal models are available in 1½-, 3-, and 5-ton sizes.

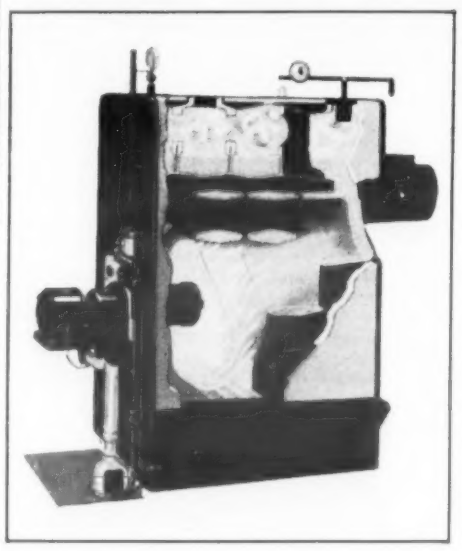
ANSUL
SULPHUR
DIOXIDE

The scientific system of dehydrating Ansul Sulphur Dioxide assures a product of minimum moisture content. Then, each cylinder is given a laboratory analysis before it leaves the plant. That is why Ansul Sulphur Dioxide gives absolute protection for refrigeration.

ANSUL
CHEMICAL COMPANY
MARINETTE - - WISCONSIN



THE WHITE BLACKBIRD STANDS OUT



SPLIT-DEGREE FLAME

Kelvinator calls it the Split-Degree Flame because, instead of operating intermittently, it varies up or down as heat is needed—even a 1/6° change in temperature instantly adjusting the oil flow accordingly. When no heat is needed, no oil flows, and nothing is burning except the pilot.

OIL KELVINATOR BURNER

(111)

Kelvinator Oil Burner offers you basic design that is DIFFERENT—advantages that are EXCLUSIVE—a selling story that CLICKS

IT isn't hard to see why the Kelvinator Oil Burner has claimed, over night, the interest and enthusiasm of dealers everywhere.

Compared with old-line burners of the intermittent type (all pretty much alike in principle and operation)—it is the "white blackbird" of the industry. It is different in basic design. It has a new and different appeal to prospects. It renders a different type of service to users.

Think what a great advantage there is in selling such a burner! It lifts your business out of the rut of price competition at the start. It gives you a selling story nobody else can use.

Chief among the exclusive features of the Kelvinator burner is the Split-Degree Flame. It burns constantly when any heat is needed—varying up or down according to temperature requirements—insuring continuous, even heat—keeping warm air always in circulation.

Kelvinator has all the safety and operating controls that other burners have. They are positive, dependable, fully automatic—but non-electrical. Hundreds of parts have been eliminated; service problems immensely simplified.

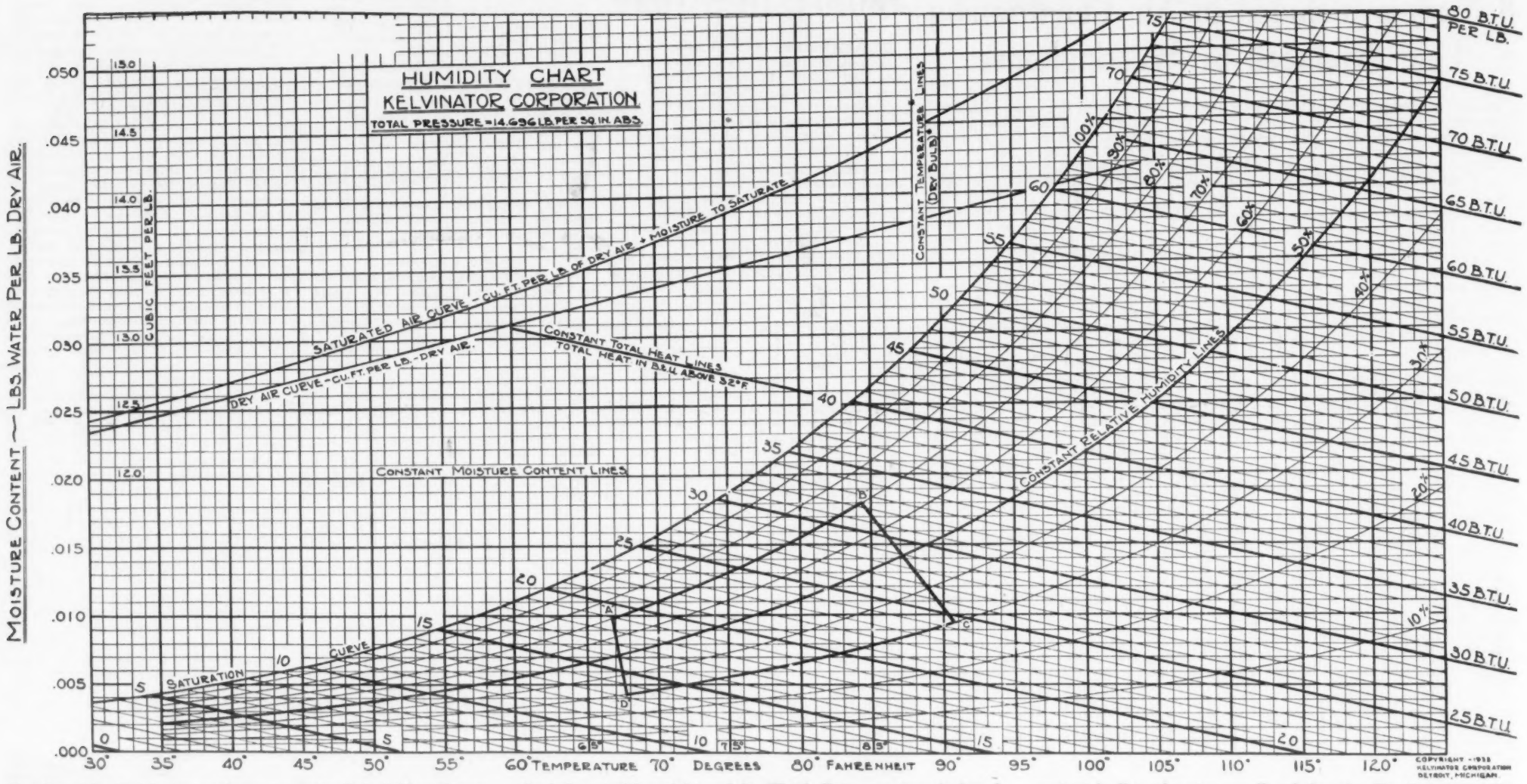
The Kelvinator burner is installed as a unit—swung through the furnace door and started—without interrupting heating service even in zero weather. A longer selling season for dealers!

Grates are not removed; no hearth is built in. The burner can be moved from house to house like any other appliance. This extends your market to home renters, as well as home owners.

These are a few of many advantages that only Kelvinator offers. Behind this burner are the resources of the great Kelvinator Corporation, and its long experience in precision manufacture. Territories are now open for those who wish to take advantage of this new profit opportunity. Write or wire for details.

KELVINATOR CORPORATION • DETROIT
OIL BURNER DIVISION

New Psychrometric Chart Devised by Kelvinator Engineers


HUMIDITY CHART
KELVINATOR CORPORATION
TOTAL PRESSURE = 14.696 LB PER SQ IN ABS.
MOISTURE CONTENT — LBS. WATER PER LB. DRY AIR.
CUBIC FEET PER LB.
SATURATED AIR CURVE - CU. FT. PER LB. OF DRY AIR + MOISTURE TO SATURATE
DRY AIR CURVE - CU. FT. PER LB. - DRY AIR.
CONSTANT TOTAL HEAT LINES
TOTAL HEAT IN B.T.U. ABOVE 32° F.
CONSTANT MOISTURE CONTENT LINES
CONSTANT TEMPERATURE LINES (DRY BULB)
CONSTANT RELATIVE HUMIDITY LINES
SATURATION CURVE
80 B.T.U. PER LB.
75 B.T.U.
70 B.T.U.
65 B.T.U.
60 B.T.U.
55 B.T.U.
50 B.T.U.
45 B.T.U.
40 B.T.U.
35 B.T.U.
30 B.T.U.
25 B.T.U.
TEMPERATURE DEGREES FAHRENHEIT
COPYRIGHT - 1933 KELVINATOR CORPORATION DETROIT, MICHIGAN

Developed by Kelvinator engineers to assist their field engineers in computing refrigeration requirements of air-conditioning installations, this new simplified psychrometric chart is featured by its ability to give a total heat value directly for any given condition of air. Thus, total heat in B.t.u.'s for any air condition is determined by following the constant total heat lines to the index at either right or left. Wet-bulb temperature is found by reading along the constant total heat line to the saturation curve, and then down to the temperature curve at the bottom. To get the dew point, one follows the constant moisture content line to the saturation curve, and down, while reading straight over to the index at the left will give the moisture content in lbs. of water per lb. of dry air. Reading up to the dry-air curve or to the saturated-air curve gives the cubic feet per lb. of dry or saturated air, interpolations for various relative humidities between dry and saturated air being a simple matter on these two curves. The "Comfort Zone" is outlined by points A, B, C, and D.

"GENUINE DETROIT"

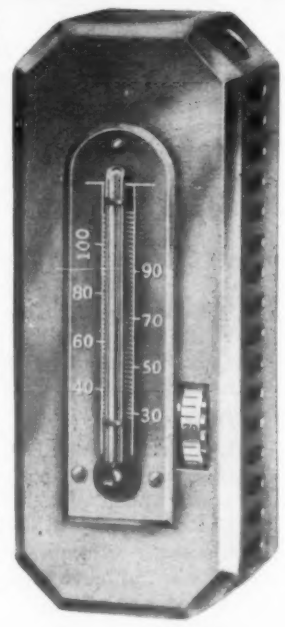
Complete

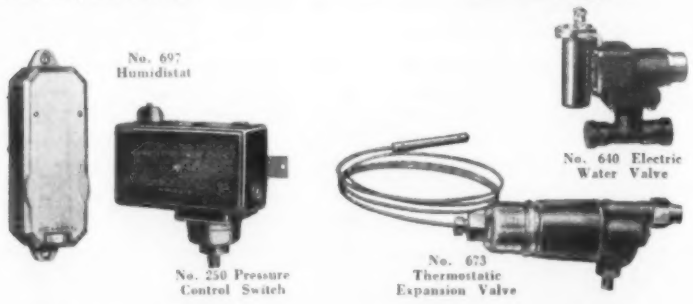
AIR CONDITIONING CONTROLS

Low-Priced Dependable Controls

There are "Genuine Detroit" accurate, reliable, low-priced controls ready for any air conditioning requirement. Before you plan your installation, find out how little it will cost to include these tested controls, to assure dependable, accurate performance.

The complete line of "Genuine Detroit" Air Conditioning Controls includes with others the No. 697 Humidistat, No. 673 Thermostatic Expansion Valve, No. 640 Electric Water Valve and the No. 250 Control Switch. Write for Bulletins Nos. 39-B, 51, 50 and 61.





DETROIT LUBRICATOR COMPANY

Trumbull, Lincoln, Marquette & Viaduct
DETROIT, Mich., U. S. A.

CANADIAN REPRESENTATIVE: Railway & Engineering Specialties Ltd., MONTREAL, QUEBEC

Lubricators • Carburetors • Valves • Automatic Controls for temperature, pressure, humidity. • Refrigeration, Oil Burner and Heating Accessories

Comfort Cooling Calculations Include Heat of Transmission, Sun, Humans, Motors, etc.

By William R. Heath
Assistant Chief Engineer, Buffalo Forge Co.

IN comfort cooling, the cooling load should be estimated in a manner similar to the heating load in winter, but in addition certain additional factors such as sun effect, bodily heat, and heat generated in lights, motors, etc., must also be taken into account. The heat gained by radiation through the building is obtained by multiplying the square feet of wall, window, and roof surface by the temperature difference inside and out, and by the proper transmission factor for the building material.

Published data on these factors is available in the 1933 *Guide* of the American Society of Heating and Ventilating Engineers (Chapter No. 3), and in the handbook "Fan Engineering," published by Buffalo Forge Co. (pages 184 to 200).

An average value of 400 B.t.u. per hour for each occupant may be used for the bodily heat.

The intensity of solar radiation varies considerably with clearness of the atmosphere and latitude. For the northern states the following approximate values may be used; these should be increased somewhat for southern states:

Solar Heat Flow Through Building Materials in B.t.u. Per Sq. Ft. for Time Indicated

Material	Horizontal Surface	East or West Wall	South Wall
Single Glass*			
Max. per hr.	251	187	119
Total per day	1900	745	700
2-in. Pine Board			
Max. per hr.	25.1	18.7	11.9
Total per day	203	80	75
4-in. Gypsum			
Max. per hr.	17.8	13.2	8.4
Total per day	179	70	66
6-in. Concrete			
Max. per hr.	28.8	21.5	13.6
Total per day	249	98	92
3-in. Conc.—1-in. Cork			
Max. per hr.	16.7	12.4	7.9
Total per day	157	62	58

*Assume an average of 15 per cent less for double glass.

Sun effect should be figured on one wall only—either south or west whichever is greater. Radiation should be figured on all exposed walls except the sun wall.

Assume it is desired to cool a shop office to 80° F. when the maximum outside temperature is 90° F., and 40° F. cooling water is available. The office is 10 ft. high and has a 4-in. flat gypsum roof.

The floor is of 2-in. wood and the walls 12-in. brick. The north and south walls are each 20 ft. long, and 54 sq. ft. of window area, each; the east wall is 25 ft. long and has 72 sq. ft. of window area; the west wall is part of another building and cooled to the same temperature.

We will assume that there are awnings on the east windows only. The areas are as follows:

North and South walls, each,
Wall area = 20x10 = 200 sq. ft.
Glass = 54
Brick = 146

East wall,
Wall area = 25x10 = 250 sq. ft.
Glass = 72
Brick = 178

The following transmission factors will be used; .295 for 12-in. brick, .399 for 2-in. wood, and 1.13 for glass. The shaded walls will have a 10° temperature difference between the two sides, and we will also use this for the floor, although in heating, only one-half the difference would ordinarily be used for floors.

The sun effect figures given in above tables include the transmission due to outside air temperature and are 17.8 B.t.u. per hour for a 4-in. gypsum roof and 11.9 for vertical south glass.

No figures are given for 12-in. brick, but they should be somewhat less than 4-in. gypsum since the heat lag is greater and the conductance about the same. We will assume 11 B.t.u. per hour for east wall and 7 for south wall.

A preliminary survey must be made to determine if the combined transmission through the east and south walls will be greater when the sun is from the east or south. Such a calculation would show, in this case, that the transmission is greater when the sun is from the south, due mainly to unshaded windows.

The cooling load is then as follows:

		B.t.u. per hr.
Roof	500x 17.8 =	8,900
South wall, brick	146x 7 =	1,020
glass	54x119 =	6,420
North wall, brick	146x .295x 10 =	431
glass	54x1.13 x 10 =	610
East wall, brick	178x .295x 10 =	525
glass	72x1.13 x 10 =	810
Floor	500x .339x 10 =	1,700
Total, transmission	=	20,416
Infiltration	5,000x3x10/55.2 =	2,720
Occupants	4x400 =	1,600
Total	=	24,736

Glancing over the above figures, two large items in the cooling load are evident, the roof and south wall glass. If the cooling season is a long one, say 60 or 90 days, it will probably pay to construct a false ceiling with a small ventilated air space and to provide awnings for the south windows.

The floor loss might also be reduced. It is possible with such changes that only one unit might suffice.

In cold storage rooms, the load is usually some lights to consider and, in live storage, a considerable product load.

NEW PSYCHROMETRIC CHART IS DEVELOPED

DETROIT—Simplified computing of air conditioning loads, once necessitating the use of slide rule and tables, is made possible by this Kelvinator psychrometric humidity chart.

Conceived by Edward Heitman, Kelvinator chief engineer and copyrighted by Kelvinator Corp., this new chart is held to be much more practical for sales engineers than others designed for the same purpose. Kelvinator selling men specializing in air conditioning are being provided with this chart and instructions on its use as a help in specifying equipment for air-conditioning installations.

The chart is being bound between two sheets of transparent etched celluloid, and the whole then bonded by pressure and heat into one piece. It is possible to make any desired computations on the face of the chart and then erase or wash away the marks without mutilating the chart, its designers state.

While the new chart has been designed especially for use in connection with the work of Kelvinator air-conditioning engineers, plans are being worked out whereby it will be available also to those refrigerating and air conditioning engineers who may be interested in it.

Whereas nearly all other charts used in air-conditioning work plot wet bulb temperatures against dry bulb temperatures with the relative humidity shown by intersecting curved or straight lines, the Kelvinator humidity chart plots dry bulb temperatures directly against total heat values. The base temperature for the measurement of total heat is 32° F. (as in steam tables) rather than 0° F., the base used in most other psychrometric charts.

Glass-Enclosed Vilter Cools Beer Garden

CHICAGO—Patrons at the Old Heidelberg Inn on the grounds of A Century of Progress here not only enjoy the conditioned air in the restaurant-beer garden, but are permitted to see in operation the Vilter equipment which cools the establishment.

A Vilter rotary compressor is used in the system, and freon (F-12) is the refrigerant employed, according to R. S. Wheaton of the Vilter Mfg. Co.

AIR CONDITIONING PARTS

WESTCO BRINGS OUT NEW TURBINE PUMP

DAVENPORT, Iowa—Developed by the Westco Pump Corp. here for use in air-conditioning systems, a new turbine-type pump with a capacity of 250 to 300 gals. per hour is being introduced to air-conditioning manufacturers.

Use of this new pump eliminates the necessity of predetermining accurately the pumping head on a brine or water circulating system, says the manufacturer. "Any decrease in head causes a proportionate decrease in h.p. consumption," engineers say, "thereby eliminating the possibility of motor overload. These pumps automatically adjust themselves to changes in operating conditions."

Interchangeability of the removable water channels permits variation of capacity without disturbing intake or discharge connections in the new pump. The unit's one moving part—the impeller—operates without metal-to-metal contact. Double-suction intake is used to create the proper hydraulic balance.

Overall dimensions of the assembled Westco pump are: length, 13 in.; height, 14 in.; and width, 13 in. Its weight is 56 lbs.

IOWA COMPANY MAKES WASHER-BLOWER UNITS

MARSHALLTOWN, Iowa — Adaptable for use with heating units or air-cooling devices, an "AmPeCo Air Washer-Blower" is being manufactured by the American Machine Products Co. here. The device is designed to circulate the air in a heating or cooling system, and to wash air with water sprays.

Another product of this manufacturer is its AmPeCo rotary blower for application with heating systems. It is also for use in circulating cool air during the summer months.

This blower, says its manufacturer, is of conventional design, except that it has an air space back of the scroll or fan housing, which provides an increased distribution of air which actually adds to the capacity of the blower. The unit is available for all sizes of furnaces.

DIRECT EXPANSION USED IN SCOTT-NEWCOMB COOLER

ST. LOUIS—A new room cooler with a water-cooled condensing unit in the lower part of the cabinet has just been introduced by Scott-Newcomb, Inc., of this city. The new cooler has been trade-named "Pioneer."

The cooler is built in one size, with a ½-hp. rotary freon compressor serving a direct-expansion finned coil. A centrifugal blower forces cooled and dehumidified air out through grilles in the top of the cabinet.

Cabinet dimensions are 31 in. high, 34 in. wide, and 11 in. deep. Connections to the water supply are made either with ¼-in. copper tubing or 3/16-in. silk-covered hose.

Scott-Newcomb also makes a central air-conditioning system for residential installation which heats and humidifies in winter, and cools and dehumidifies in summer with a mechanical refrigeration system.

Somers Designs Spun Glass Filters

DETROIT—A new type of cleanable spun glass air filter has been introduced by H. J. Somers, Inc., here, and has been adopted on several air-conditioning systems such as Gar Wood Engineering Co., Lakeside Co., and Rudy Furnace Co., according to H. J. Somers.

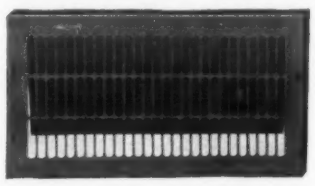
The filtering medium is spun glass, approximating a human hair in diameter, and about 20 in. long. Frames are of hot-galvanized iron so the filter section can be cleaned with a water spray without rusting. For greasy dust or dirt, hot water is used.

In certain industrial applications of air conditioning, the filter may be used as a combination eliminator-filter, Mr. Somers points out, with a water spray directed against the filter to make it self-cleaning.

The clean filter has a resistance dry equal to .06 in. of water, which builds up to .08 in. of water and then sheds ordinary dry dust. A feature of its construction is that its cross-sectional area can be increased by making the frames deeper and using a "V" section to increase the filtering area.

AUER CO. ANNOUNCES NEW AIR-CONDITIONING GRILLES

CLEVELAND—A new line of grilles and registers for air-conditioning systems has just been introduced by the Auer Register Co. of this city. The new grilles are designed for a wide variety of air inlets and outlets, according to George S. Auer, president of the company, and were designed particularly to suit the ideas of engineers and architects planning air-conditioning installations.



Note the adjustable "valve" on this new Auer register.

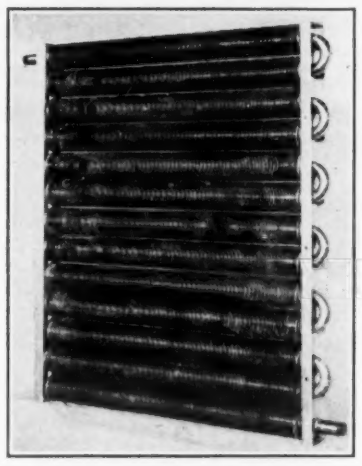
Gilbert Manufacturing Line of Humidifiers

NEW HAVEN, Conn.—Included in the line of humidifiers being manufactured this season by the A. C. Gilbert Co. here are six models ranging in capacity from one to two gals. of water, and priced for retail trade from $24.95 to $87.50.

Operation of the Gilbert humidifier is as follows: An inverted cone submerged in water revolves rapidly and draws water up onto a disc above it, which is also revolving rapidly and synchronizing with the cone. This cone throws the water outward by centrifugal force against shutter-like vanes by which it is broken up into a mist which is blown out of the unit and into the air.

Five of the models must be filled manually with water, while one—the most expensive model—may be connected to a permanent water supply. Five of the units are on pedestals, and one is a table model.

Air-Cooling Coil



Specially designed for air-conditioning equipment, this new finned coil of the Rome-Turney Radiator Co. provides over 120 sq. ft. of cooling surface.

* * *

ROME-TURNEY ANNOUNCES AIR-COOLING EVAPORATOR

ROME, N. Y.—Designed especially for use in air-conditioning equipment, a new continuous-tube evaporator 32½ in. high is being manufactured by the Rome-Turney Radiator Co. of this city.

The coil is made of 1-in. o.d. seamless copper tubing, fitted with the company's helical fin, formed continuously around the tubing, according to W. L. Lynch, general manager. Overall diameter of the tube and fin is 2½ in., and the coil—which is of the single row type—provides more than 120 sq. ft. of surface.

When greater coil depth is desired, a number of these coils may be bolted together, says Mr. Lynch. The company is also manufacturing coils of other sizes, the majority of them using ⅝-in. o.d. tubing formed in continuous coils.

LARGE FILTERING SYSTEM INSTALLED IN RADIO CITY

NEW YORK CITY—Installed in Radio City's building No. 9, and in several smaller buildings of the group, is an air-filtering system supplied by the Owens-Illinois Glass Co. of Toledo.

"Dustop" glass-wool filters were chosen for use in these buildings, and the 34 installations of this equipment in the Radio City group required 1,275 frames for the filters, which handle a total of 1,020,000 cu. ft. of air per minute.

In building No. 9, largest of the entire group, 348 frames were installed to deliver 278,400 cu. ft. of air into the structure, according to Owens engineers.

The Dustop standard unit is composed of a closely packed mass of finely twisted viscous-coated glass wool in a fibre container, this container having open grilled faces permitting free passage of air through the glass wool. The weight of the unit is 2 lbs.

The glass wool's viscous surface picks up the dust particles from the air. The mass of glass fibres forms a twisted intertangled screen with which particles in the air collide in passing through the filter.

These filters in their standard form are 2 in. in thickness and are set up in pairs. In air-conditioning equipment for large industrial or building use, they may be set up in banks at the intake side of the air duct where the air is drawn into the factory or building by forced draft, Owens men explain.

MOTOR WHEEL CORP. MAKING WINTER AIR CONDITIONER

LANSING, Mich.—Now in production by the Motor Wheel Corp. here are three models of the "MW Weather Control Unit," a winter air conditioner designed to heat, circulate, and humidify the air.

The unit consists of an MW natural draft oil burner, blower, evaporation-type humidifier, and thermostatic controls, and can be installed for use with existing ducts and cold air returns. An air washer and filter is incorporated into this equipment on special order.

GLASS FILTER TESTS SHOW HIGH POLLEN REMOVAL

TOLEDO—In tests made by Chicago's E. Vernon Hill Co. recently to determine the efficiency of Dustop glass-wool filters in removing pollen from the air, it was found that the filters removed 99 per cent of the pollen under conditions approximating those found in the average home, according to officials of the Owens-Illinois Glass Co. here, manufacturer of the filters.

Klenzair Cleans, Humidifies and Circulates

TOLEDO—Swartzbaugh Mfg. Co. here is continuing production of its Klenzair unit which cleans, circulates, and humidifies the air of a room, and has added to its line an attachment for increasing the rate of humidification with the Klenzair unit, and another for use with the device in homes where hay fever victims live.

Available in pedestal, desk, and wall-bracket models, the Klenzair is a unit which draws air through a water spray produced by four revolving discs which receive water from the bowl of the unit by means of two rubber rings.

The unit washes approximately 1,000 cu. ft. of air every 10 minutes, according to the manufacturer. Weight of the pedestal model, which is standard, is 32 lbs.

The new heating accessory is a device having circular coils which fit on the back of the Klenzair unit. When attached to an electrical outlet, the coils become red hot, and air is heated by them, as it is drawn in from the back of the unit.

The hay fever attachment is an adjustable steel window insert and a flexible composition material air shaft which fits on the back of the Klenzair. The device makes possible the cleaning of all outdoor air as it is admitted to a room.

DAVIES DESIGNS CLEANING, SOUND-ABSORBING DEVICE

NEW YORK CITY—Designed for use in offices and residences, a small cabinet unit for filtering air and absorbing sound is being manufactured by the Davies Air Filter Co. of this city. The unit is for use on a window ledge, and regulates the inflow of air from 50 cu. ft. to 350 cu. ft. of air per minute, according to the manufacturer.

It makes use of the company's Airplex pleated cotton fabric filtering material, which is also supplied by the Davies organization for industrial applications. Trade name of the unit is "Filteraire."

BAYLEY AIR WASHER USED IN BIG PLANTS

MILWAUKEE—Designed to wash air, and humidify or dehumidify it if the water is brought to the proper temperature before being used, an atomizer known as the "Turbo Air Washer" is being made by the Bayley Blower Co. of this city. The equipment is built for use in central air-conditioning systems in large buildings.

A complete washer consists of inlet louvres, a turbo-atomizer with direct-connected motor and cover, spray piping within washers, eliminators, tank, casing enclosing the entire unit, drain connection, and overflow opening. A Bayley Plexiform fan is used to draw air through the washer.

This company's turbo-atomizer consists of an atomizing rotor with a set of atomizing pins in the periphery, the driving motor to which the rotor is directly connected, and a large orifice type water delivery nozzle.

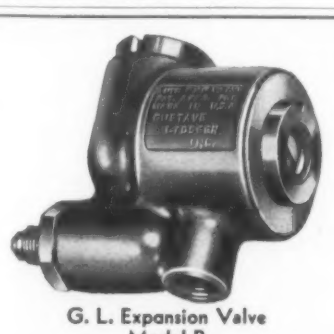
Spray Action of Washers

In one of the company's standard washers, the casing for the entire unit is made of metal. The atomizer causes the spray to be distributed obliquely to the air flow. The spray is confined to the washer chamber by side walls, ceiling, and tank, making it impossible for air to pass through the unit without coming in contact with the water.

Spray water is supplied from a tank, and is delivered to the atomizing rotor by means of a motor-driven pump. Tanks of the unit or multiple type are optional with this system, the bottoms of all tanks being raised 2 in. above the floor to permit free air circulation and prevent corrosion.

Atomizer motors are equipped with automatic starters, having dashpot-type overload relays which automatically shut off the current in case of overloading. Variable speed motors are provided where maximum cleaning efficiency, with a minimum humidifying effect, is required. This permits reduction of the atomizer speed and a resultant coarser spray.

One turbo-atomizer will handle from 40 to 60 gals. of water per minute per hp., according to the manufacturer.



PROVEN?—Yes Sir!
EFFICIENT?—Yes Sir!
SIMPLE?—Yes Sir!

SENSATIONALLY PRICED FOR THE TIMES

Send for Sample
You be the judge and jury

GUSTAVE LIDSEEN, INC.
832-840 S. Central Ave. Chicago, Ill.

G. L. Expansion Valve Model B

CHECK YOUR NEXT SERVICE JOB WITH A TURNER HALIDE DETECTOR

It will positively detect leakage of any Chlorinated Hydrocarbon Refrigerant including Artic, Methyl Chloride, Ethyl Chloride, F-12, F-114, Freon, Carrene, Methylene Chloride, Trichlore-ethylene, and Dichlorodifluoromethane.

The Turner Halide Detector is carried and used by thousands of service men. It is indispensable for making field tests as it is extremely sensitive and will detect minute leaks and yet is very easily handled and operated. Order a test sample now and save time and expense.

¶ *WRITE FOR CATALOG "C" AND PRICES*

THE TURNER BRASS WORKS, Sycamore, Illinois.

The Best Tubing . . . *PLUS!*

Whether you make a room cooler, burner, humidifier, washer, control or other air conditioning unit—the best tubing is a vital element in your success. Wolverine is already the foremost tubing name in the air conditioning industry. Specify WOLVERINE—to be *sure* of the best. Or—have our modern Manufacturing Department quote on fabricated parts, assemblies, of plain or tin plated, round, finned or special cross section tubing. Large Stocks—quick deliveries—perfect quality always. WOLVERINE TUBE COMPANY, 1491 Central Avenue, Detroit, Michigan. Sales Offices in 29 cities. Export Dept. H. M. Robins Company, 120 Madison Avenue, Detroit.

WOLVERINE
Seamless Copper Tubing
For Refrigeration

PATENTS

ISSUED JUNE 27, 1933

1,915,276. REFRIGERATING APPARATUS. Joy D. Glass, Arcadia, Calif. Filed Aug. 29, 1930. Serial No. 478,625. 5 Claims. (Cl. 62—120.)

1. In a refrigerating apparatus, a refrigerant vaporizing container, a vertically corrugated radiator surrounding and mounted for vertical adjustment upon said container, a condensing receptacle, a substantially inverted U-shaped tube connecting said vaporizing container with said condensing receptacle, an open ended tube extending from the lower portion of the chamber in said vaporizing container to the interior of said inverted U-shaped tube at a point above the end thereof that is connected to said vaporizing container, a valve controlled inlet from the upper portion of the vaporizing chamber into the lower portion of the leg of the inverted U-shaped member that is connected thereto which valve is located above the upper end of the open ended tube that extends from the vaporizing container into the inverted U-shaped tube and a receptacle suspended from the other leg of the inverted U-shaped tube and spaced apart from the wall thereof.

1,915,584. REFRIGERATION. Baltzar Carl von Platen and Carl Georg Munters, Stockholm, Sweden, assignors to Electrolux Servel Corp., New York, N. Y., a Corporation of Delaware. Filed May 18, 1928, Serial No. 278,904, and in Sweden March 3, 1923. 5 Claims. (Cl. 252—5.)

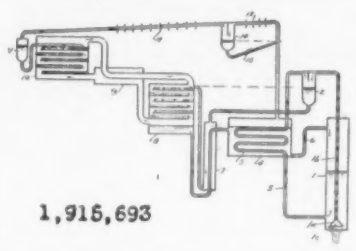
1. As a material for refrigeration the group of cooperating substances consisting of monomethylamine, water and hydrogen.

1,915,647. GLASS DEFROSTING TRAY FOR MECHANICAL REFRIGERATORS. Alvie C. Crimmel and Henry H. Crimmel, Hartford City, Ind., assignors to Sneath Glass Co., Hartford City, Ind., a Corporation. Filed June 11, 1931. Serial No. 543,642. 3 Claims. (Cl. 65—53.)

1. In combination a plurality of substantially identical and independent trays, each of quadrilateral outline and having a bottom at an appreciable depth below the top of the sides and adapted for interchangeable side-by-side positioning, prevention of leakage therebetween when so positioned and arranged for independent side-by-side sliding movement, each tray including an overhanging rim at the top of one side and a substantially rimless upper edge upon the opposite side, the rim being positioned at an elevation above the top of the rimless side whereby when overlapping a rimless side of an adjacent tray leakage between the sides is prevented and any tray may be slid longitudinally in direction of the sides without interference from or disturbance to the adjacent tray.

1,915,693. MEANS AND METHODS OF REFRIGERATION. Bo Folke Randel, San Diego, Calif. Filed April 25, 1932. Serial No. 607,348. 18 Claims. (Cl. 62—119.5.)

3. Absorption refrigerating apparatus comprising a boiler for partially vaporizing an absorbent, a separator, a thermostatic lift pump between said boiler and said separator, a refrigerant generator and heating means in said generator, means to conduct vapor from said separator to said heating means and further means to conduct condensate from said heating means back to said boiler.



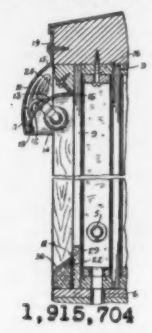
1,915,693

1,915,694. VALVE SILENCING CONSTRUCTION. Ira H. Reindel, Detroit, Mich. Filed Oct. 27, 1927. Serial No. 229,150. 20 Claims. (Cl. 230—228.)

1. The combination, with a cylinder and a valve-enclosing shell positioned at one end thereof, of a spring-actuated valve disc adapted to regulate the fluid flow therebetween, a pressure-reduction chamber interposed between said valve disc and its seat and the interior of the cylinder, a bleeder disc separating said chamber from the interior of the cylinder, and a spring of inferior strength to that associated with said valve disc, adapted to yieldingly hold said bleeder disc in seated position.

1,915,704. SHOWCASE REFRIGERATOR. Virgil P. Warren, Atlanta, Ga. Filed Jan. 28, 1931. Serial No. 511,879. 7 Claims. (Cl. 20—40.5.)

1. In a refrigerated showcase, a window comprising a plurality of spaced glass panels defining a plurality of air cells



1,915,704

therebetween, means for selectively reducing the humidity of the air in said air cells below the point at which moisture will condense from said air on to the glass surfaces bounding said air cells, in combination with means for raising the temperature of the outside glass panel to such a point that moisture will not condense upon the outside surface of said panel from the atmosphere outside of the showcase.

1,915,800. ROTARY COMPRESSOR. John R. Price, Charlottesville, Va., assignor to McElroy-Shepherd Laboratories, Inc., Charlottesville, Va., a Corporation of Virginia. Filed March 27, 1930. Serial No. 439,318. 7 Claims. (Cl. 230—153.)

1. In a rotary fluid pump or compressor, a housing, a rotor eccentrically positioned therein to have relative rotation therewith, a slot extending entirely through said rotor blades, slidably mounted in said slot, in contact with the inner periphery of said housing, a means for producing said relative rotation, thereby forming a fluid pressure space in said pump, and a duct in said rotor, to convey compressed fluid from said space to one side of each of said blades, to press the same flatwise thereof against the sides of said slot in said member, thereby preventing leakage of compressed fluid therethrough.

1,915,849. GLASS DEFROSTING TRAY FOR MECHANICAL REFRIGERATORS. Alvie C. Crimmel and Henry H. Crimmel, Hartford City, Ind. Filed June 11, 1932. Serial No. 616,630. 2 Claims. (Cl. 65—53.)

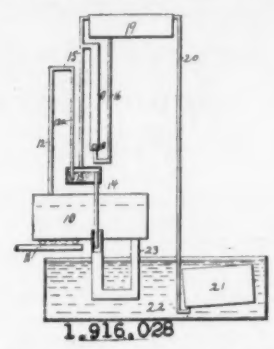
1. An integral vitreous tray including a bottom, peripherally enveloping side walls, and a plurality of spaced and parallel upstanding ribs upon the upper surface of said bottom and extending from each of a pair of side walls toward the other wall, adjacent ribs being of unequal length, the ribs extending from opposite side walls being longitudinally aligned and terminating short of meeting engagement, each longitudinally aligned pair forming a space therebetween, the adjacent spaces being offset from the other for circulation and prevention of sheet locking.

1,915,965. METHOD AND COMPOSITION FOR DETECTING LEAKS IN REFRIGERATING SYSTEMS. Harry M. Williams, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Ohio. Filed May 29, 1931. Serial No. 541,123. 3 Claims. (Cl. 23—230.)

1. In refrigerating apparatus using as a working fluid both a refrigerant and a lubricant, the method of detecting leaks which comprises dissolving a basic dye in the lubricant, treating the apparatus with a material stainable with the basic dye, and staining the material at the point of leakage.

1,916,028. REFRIGERATION APPARATUS. Henry Elmer Willsie, New York, N. Y. Filed Oct. 13, 1926. Serial No. 141,292. 14 Claims. (Cl. 62—120.5.)

6. Absorption type refrigerating apparatus, comprising a still-absorber, a condenser, an evaporator, a drainage conduit from the bottom of the evaporator capable at all times of completely draining the evaporator, and means operating and effective at all times for permitting automatic drainage therethrough of absorbing



1,916,028

agent undesirably present in the evaporator but preventing drainage of desirable refrigerant.

1,916,030. REFRIGERATING APPARATUS. Edmund E. Allyne, Cleveland Heights, Ohio. Filed Feb. 13, 1930. Serial No. 428,052. Renewed Feb. 18, 1933. 13 Claims. (Cl. 62—118.)

1. In absorption refrigerating apparatus, a still absorber, an evaporator and a condenser and loop structure all connected in operative cycle, said condenser and loop structure comprising condenser elements, loop elements, and heat transferring fins common to each other and to both said condenser and loop elements, whereby heat from said condenser elements is effective upon said loop elements during the heating period and the cooling effect of the gas on its return through the condenser during the cooling period is effective upon said loop.

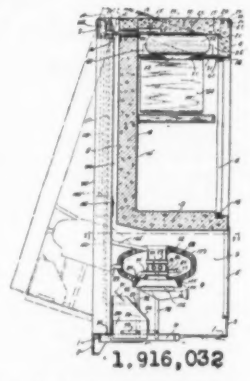
7. In absorption refrigerating apparatus, a still absorber, a condenser, an evaporator, a liquid seal trap for establishing proper circuiting of the gas during the heating and cooling periods, and a rectifier in the form of a vertical loop having two legs, one entering the trap above the liquid therein, the other extending downward and connected to the condenser, and vertically arranged heat radiating fins carried by both of said legs.

1,916,031. REFRIGERATING APPARATUS. Edmund E. Allyne, Lantana, Fla. Filed March 7, 931. Serial No. 520,794. 8 Claims. (Cl. 62—118.)

1. Absorption refrigerating apparatus comprising a still, an evaporator, and primary and secondary condensers all connected in operative cycle, a loop in circulatory communication with the liquor space in said still and arranged outside of the heat zone thereof, a gas return connected to said loop, heat radiating fins connecting the primary condenser and loop in heat transfer relation, and separate means for cooling the secondary condenser.

1,916,032. REFRIGERATING APPARATUS. Edmund E. Allyne, Cleveland, Ohio. Filed July 1, 1931. Serial No. 548,135. 19 Claims. (Cl. 62—118.)

1. In an absorber for absorption refrigerating apparatus, a distributor in the form of a member located in the weak



1,916,032

liquor having communication at its bottom and top with the absorbent in the absorber, and wire mesh covering the upper communication and of sufficient fineness to trap the gas thereunder.

6. In absorption refrigerating apparatus, a cabinet having a heat insulated refrigerating chamber, a false ceiling in said chamber and forming a heat collecting compartment above it, an evaporator in said compartment, said ceiling being provided with an opening for exposing a portion of said evaporator to the refrigerating chamber, a refrigerating unit comprising a still absorber, evaporator and condenser connected in operative cycle with said evaporator, and a freezing unit in said chamber in heat transfer relation with said evaporator by way of said opening.

1,916,165. REFRIGERATOR. Robert G. Carlton, Nashville, Tenn., assignor to Tennessee Enamel Mfg. Co., a Corporation of Tennessee. Filed Aug. 24, 1932. Serial No. 630,278. 9 Claims. (Cl. 62—46.)

1,916,166. REFRIGERATOR. Robert G. Carlton, Nashville, Tenn., assignor to Tennessee Enamel Mfg. Co., Nashville, Tenn., a Corporation of Tennessee. Filed Nov. 14, 1932. Serial No. 642,657. 7 Claims. (Cl. 62—46.)

TRADEMARKS

Ser. No. 328,119. Fourness Development Corp., Ltd., New York, N. Y. Filed June 20, 1932.

No claim is made to the word "Refrigeration" nor to the slogan "When It's Hot It's Cold" apart from the mark shown on the drawing.

For Refrigerating Vehicle Bodies and Mechanical Refrigerating Equipment Therefor.

Claims use since March, 1932.

G-E ENGINEERS ANNOUNCE SMALL CIRCUIT BREAKERS

SCHENECTADY, N. Y.—A complete line of small circuit breakers, rated up to 600 volts and 600 amperes, and designed for the control and protection of industrial circuits, house service entrance, branch circuits, refrigerators, ranges, etc., has been announced by the General Electric Co.

In addition to offering prompt restoration of service, these new breakers, designated as AF-1, employing a new principle of arc interruption, permit no external arc. The interruption takes place within a closed metal chamber.

When an over-current trips the breaker, the contacts are disengaged within the metal chamber. The arc, which is drawn between the contacts, generates a pressure which increases the resistance of the arc path so rapidly that the circuit is interrupted in .008 of a second, G-E engineers claim.

The new breakers are trip-free from the operating handle and cannot be held in the closed position when an overload exists on the circuit.

PATENTS
Searches, Reports, Opinions by a Specialist in REFRIGERATION
H. R. VAN DEVENTER
Solicitor of Patents - Refrigeration Engineer
342 MADISON AVE. NEW YORK

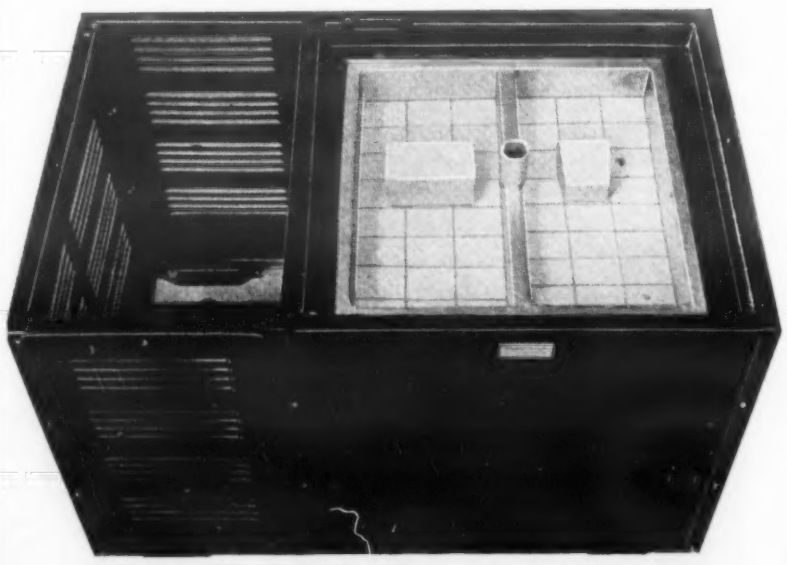
Testing Service
for Domestic and Commercial Electric Refrigeration
Testing and experimental laboratory service for Manufacturer, Distributor, Central Station. Test data exclusive property of client.
Electrical Testing Laboratories
80th St. & East End Ave.
New York

How to ... at Lower COSTS! save money on Motor, Transmission, Crank, Eccentric and Compressor Shafts: Send us your blue prints, we will send you our prices. Write today.
MODERN MACHINE WORKS
156 N. Milw. St., Milwaukee, Wis.
precision built SHAFTS

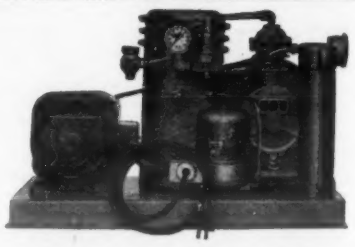
PUREST SULPHUR DIOXIDE
Extra dry
ESOTOO
VIRGINIA SMELTING CO.
WEST NORFOLK, VA

WACO
BEER PUMP
Oil and Beer do not mix.
The Waco Beer Pump has no crank case filled with oil like the air compressor — it is an air pump — designed expressly for dispensing clean wholesome air for serving beer—it fits in anywhere—write for details and territory offerings.
WATER APPLIANCE CO.
MILWAUKEE

SCHAEFER ICE CREAM CABINETS

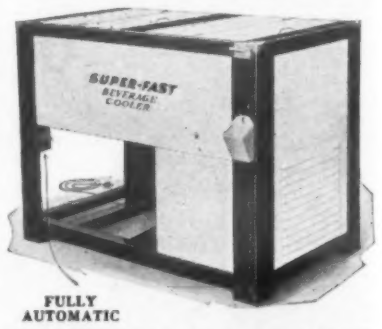


(Oblong Sleeves)
All steel construction, cork insulation, porcelain exteriors, monel top.
ALL STANDARD SIZES AVAILABLE FOR IMMEDIATE SHIPMENT WITH OR WITHOUT HIGHSIDES.
SPECIAL SIZES FABRICATED IN THREE DAYS.
Write for distributors prices and discounts.
HAROLD L. SCHAEFER,
Incorporated
1620 Harmon Place
Minneapolis Minnesota



QUINCY
Automatic
BEER PUMPS
This completely automatic beer pump unit is especially adapted for mounting in portable bars or novelty or specialty boxes. Exact pressure is always available—oil and moisture separator positively prevents any vaporous oil, moisture or dirt from entering the beer...1/4 Horse power repulsion induction motor...Overall dimensions: Length 23 in., width 12 in., height 14 in. Shipping weight 100 lb. Write for prices and literature.
Quincy Compressor Co.
140 Maine Street Quincy, Illinois
905 W. Wacker Drive Chicago, Illinois
30 Church Street New York, New York
QUINCY Compressors

THE PROFITABLE SALES OPPORTUNITY YOU'VE WAITED FOR



FULLY AUTOMATIC
NEW SUPER-FAST
ELECTRIC BEER COOLER
You can make money selling the new Super-Fast beer cooler. It's the outstanding unit on the market and the lowest-priced quality cooler ever produced. Nine models—6 mechanical and 3 ice refrigerated. All-steel construction. Capacities up to 192 twelve-ounce bottles. Capable of cooling 84-degree beverages to 38 degrees in 30 minutes. Desirable territories now open for distributors or sales representatives. Prompt action advisable.
Write or Wire Today
ELECTRIC BEVERAGE COOLER COMPANY
421 S. Delaware St., Indianapolis, Ind.

BUYER'S GUIDE

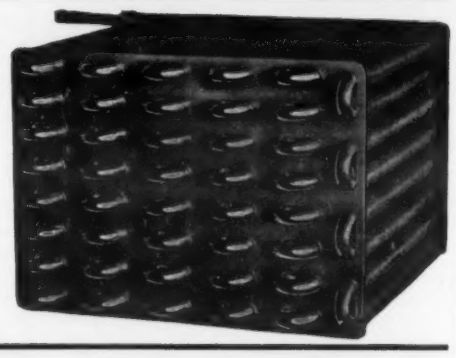
MANUFACTURERS SPECIALIZING IN SERVICE TO THE REFRIGERATION INDUSTRY

A NEW FIN COIL *by* PEERLESS

Wedge-locked and edge-locked aluminum fins on tinned copper tubing for methyl chloride, sulphur dioxide, F-12, etc.,—aluminum tubing for ammonia.
Absolute Metal to Metal Contact.
A Superior Coil in which Soldered Return Bends have been eliminated.
Priced to meet 1933 conditions.
Write—Wire for Catalog.

PEERLESS ICE MACHINE CO., 515 W. 35th St., Chicago, Ill.

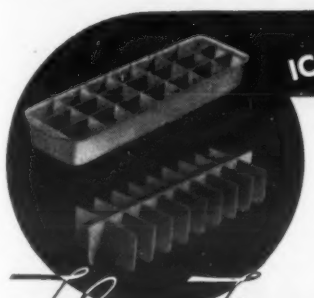
ROME EVAPORATORS



Highest Efficiency
With Smallest Number of Joints

Rome-Turney Radiator Co.
Rome, N. Y.

Makers of Rome Condensers and Helical Finned Tubing



ICE CUBES THE MODERN WAY

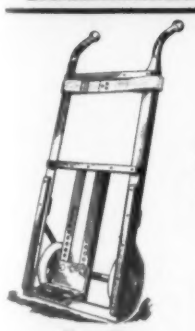
Flexible rubber trays for all types and makes of mechanical refrigerators. Also flexible rubber grids for all metal trays.
See your distributor—the maker of the refrigerator you sell—or write for money-making facts to The Inland Manufacturing Company, Dayton, Ohio.

Flexo Trays • Flexo Grids

Dayton V-Belts

For all makes and types of refrigerators. There is a stock near you. Ask for price list and name of your nearest distributor.

THE DAYTON RUBBER MFG. CO.
Dayton, Ohio
The World's Largest Manufacturer of V-Belts



Type X

The Dayton CARRIER Truck
Deliver Your Refrigerators on Rubber

Type X has 53 inch Handles and 8 inch Rubber Wheels. Type Y has 70 inch Handles, 5 inch Rubber Wheels and skids.

Type X with one strap $16.00
Type Y with one strap $17.50
f.o.b. Dayton

International Engineering Inc.
Dayton, Ohio
15 Park Row — New York

Type Y

RACK'S KOILS KOOL

THE TRADEMARK OF FOUR
PACE SETTERS
IN COIL EFFICIENCY

SUR-E-FEX	Fin Coils
FAN-E-FEX	Diffusing Units
HUM-E-FEX	Non-Dehydrating Coils
SAN-E-FEX	Air-Conditioning Units

SEND FOR NEW CATALOG DESCRIBING THESE SENSATIONAL DEVELOPMENTS

REFRIGERATION APPLIANCES, INC.
H. J. KRACKOWIZER, Pres.
1342 WEST LAKE ST., CHICAGO

A Thermostatic valve that can be installed in any position or location—and in any temperature.

ALCO THERMO VALVE

Methyl Chloride — F-12
Sulphur Dioxide

The control always resides in the thermal bulb—even if the body of the valve is subjected to a lower temperature.

Write for ALCO Bulletin 129

Type NR

ALCO VALVE CO., INC., 2629 Big Bend Blvd., St. Louis, Mo.
New York · Los Angeles · San Francisco · Dallas · Atlanta · Denver

QUESTIONS

Refrigerator Dishes

No. 1281 (Dealer, Ohio)—"Please advise us names of makers of refrigerator dishes on revolving containers similar in design to the Scurlock set, as we understand there are similar sets on the market selling at lower prices."

Answer—The following manufacturers of refrigerator dishes are listed on pages 340 and 341 of the REFRIGERATION DIRECTORY and MARKET DATA BOOK: Aluminum Goods Mfg. Co., Manitowoc, Wis.; Bellaire Enamel Co., Bellaire, Ohio; Corning Glass Works, Corning, N. Y.; Federal Enameling & Stamping Co., Thompson Ave., McKees Rocks, Pa.; Fry Glass Co., N. C., Rochester, Pa.; Geuder, Paeschke & Frey Co., 324 N. 15th St., Milwaukee, Wis.; Joseph L. Hallett, Braintree, Mass.; McKee Glass Co., Bullitt Ave., Jeannette, Pa.; Polar Ware Co., Lake Shore Rd., Sheboygan, Wis.; Sneath Glass Co., Hartford City, Ind.; United States Stamping Co., Fostoria Ave., Moundsville, W. Va.; Vollrath Co., 18th St. & Michigan Ave., Sheboygan, Wis.

American Catalogs Wanted

No. 1282 (Sales Agent, Canary Islands)—"Desiring to give wider scope to my refrigeration business, I would be much obliged if you would send me your catalogs and information on all the modern units which are sold today by that important industry."

Answer—Consult the REFRIGERATION DIRECTORY and MARKET DATA BOOK which lists all known manufacturers of refrigeration systems and parts and supplies, classified by products.

Northern Ohio Manufacturer

No. 1283 (Illinois)—"Please advise me the name and address of the concern in northern Ohio which manufactures a kerosene refrigerator."

Answer—Perfection Stove Co., 7609 Platt Ave., Cleveland, Ohio.

1933 Sales Statistics

No. 1284 (Ohio)—"Do you have information as to the number of ice boxes and electric refrigerators manufactured during the first six months of this year, that is, from Jan. to July 1, 1933? In giving this information you would in no way be obligated as to its exactness. Approximate amounts will do very well.

"I am making a report which can only be intelligently prepared with this information, and would like to get the figures separately on ice boxes and electric refrigerators.

"Would it be possible for you to furnish me with a list of the different rubber manufacturers that make the various rubber parts for refrigeration use?"

Answer—Monthly figures to June 1 for sales by electric refrigerator manufacturers to dealers and distributors were published in the July 5 issue of ELECTRIC REFRIGERATION NEWS. Ice-box manufacturers do not have an active association for the collection of their statistics such as the Nema Refrigeration Division in the electric refrigeration field, and it is almost impossible to get any kind of accurate information on the sale of ice boxes.

The following manufacturers supplying rubber parts for electric refrigerators are listed on pages 202 and 203 of the REFRIGERATION DIRECTORY: Aetna Rubber Co., 4710 State Rd., Ashtabula, Ohio; Dayton Rubber Mfg. Co., West Riverview Ave., Dayton, Ohio; Inland Mfg. Co., 15 Coleman Ave., Dayton, Ohio; Luzerne Rubber Co., Trenton, N. J.; American Hard Rubber Co., 11 Mercer St., New York, N. Y.; Dryden Rubber Co., 1014 S. Kildare Ave., Chicago, Ill.; Jarrow Products Corp., 143 W. Austin Ave., Chicago, Ill.; Miller Rubber Products Co., South High St., Akron, Ohio; R. H. Schwartz Rubber Corp., 3708 Payne Ave., Cleveland, Ohio.

Replacement Parts

No. 1285 (Distributor, British Columbia)—"We would appreciate your kindness in sending us the names of firms supplying service and replacement parts for all makes of small automatic refrigeration equipment."

Answer—See page 341 of the REFRIGERATION DIRECTORY.

Imitation Foods Issues Product Catalog

BROOKLYN—Imitation Food Products Co., manufacturer of composition articles for window, counter, and refrigerator display, has just issued a catalog listing more than 175 food articles made in imitation.

Many of the products made by the Imitation Food Products Co. are on display at A Century of Progress exposition in Chicago, according to T. A. Brown, sales manager.

GOVT. ORDERS 278 UNITS FROM SERVEL

EVANSVILLE, Ind., July 10.—Servel Sales, Inc., has received a U. S. Army contract for electric refrigeration equipment for the second consecutive year, it was announced here today by F. E. Sellman, vice president of the company. The contract calls for 278 Servel hermetic refrigerators for use in various army posts, flying fields, and hospitals.

With the delivery of the refrigerators under the 1933 contract, the U. S. Army will have in operation 1,461 units of the hermetic type, the original 1932 contract having been for 1,183 refrigerators.

One of the Servel refrigerators is installed in the Tripler General Hospital at Honolulu.

Other units are distributed as follows: Bolling Field, Ft. Lewis, and the Army Medical Center, Washington, D. C.; Edgewood Arsenal, Ft. Hoyle, and Ft. Meade, Maryland; Ft. Dupont, Delaware; Ft. Bragg and Pope Field, North Carolina; Ft. Ogelthorpe, Georgia; Ft. Mason, The Presidio, and Letterman General hospital, San Francisco, and Rockwell Field, California; Ft. Hamilton and Ft. Wadsworth, New York; Ft. Monmouth, New Jersey; Battery Cove at Alexandria and Ft. Monroe, Virginia; Ft. Logan, Colorado.

SAMPSON SHOWS NORGE LINE FROM DISPLAY CAR

CHICAGO—A Norge display car for use by dealers has been put into operation in the metropolitan area here by the Sampson Electric Co., Norge distributor.

Dealers who have used the truck report that they have enjoyed considerable success with it as a means of obtaining live prospects, according to B. D. Greenhouse, assistant manager of the Sampson Electric Co. The first dealer to use the truck made one sale and obtained 25 good prospects. Another dealer had 43 visitors in the truck, and a third made a sale directly from the truck and obtained 15 worthwhile prospects.

Three Norge refrigerators, models DP, JP, and KP, are mounted on the truck.

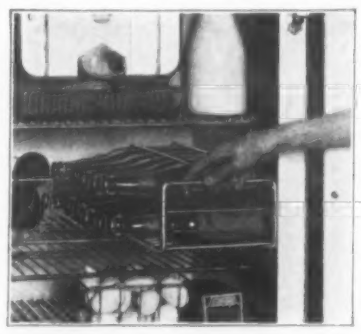
The truck comes to the dealer's store at 9 o'clock in the morning. The dealer assigns a salesman to ride with the driver all day, and the truck is driven around the streets in the community which the dealer serves. It is stipulated that the truck shall be driven through the "Loop" for at least one hour during the day.

BEVERAGE RACK BUILT BY UNION STEEL PRODUCTS

ALBION, Mich.—To organize the contents of an electric refrigerator to improve its capacity is the purpose of the beverage rack just developed by Union Steel Products Co. here.

The beverage rack is made of steel wire formed and welded to a size that will hold three bottles firmly lying on their sides. This provides space for stacking two more bottles securely in a second layer, making a total capacity of five.

Another size is made for six bottles over which five more may be stacked,



and is thus an 11-bottle rack. The lower wires serve as "runners" so that the loaded rack may easily be slid onto any refrigerator shelf with a clearance of 5¼ in.

The rack also makes a carrier for bringing a supply of beverages from the case or the cellar to the refrigerator. Then the rack is simply drawn out and carried to the table or living room. The 5-bottle size will retail at about 25 cents and the 11-bottle size at 30 cents.

Toledo Distributor Sells 227% of Quota

TOLEDO—The Electric Range and Equipment Co., distributor for Leonard Refrigerator Co. in this territory, had purchased 227 per cent of its quota from the factory by the end of June, according to a report made at a sales meeting here July 6 by Jack Berry, president of the organization, and T. H. Skinner, sales manager.

CLASSIFIED

PAYMENT in advance is required for advertising in this column.

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

POSITIONS WANTED

POSITION desired as sales engineer or sales supervisor in charge of commercial refrigeration sales. Thoroughly familiar with every phase of Commercial Electric Refrigeration from first contact with prospect to completion of installation, having had several years' experience with the leading makes. Nominal salary and commission. Address Box 576.

BUSINESS FOR SALE

FOR SALE: One of the oldest and best refrigeration businesses in New England, employing four installation men. Well advertised. Selling on account of sickness. Marsden's Store Fixture House, Inc., James Street, East Providence, R. I.

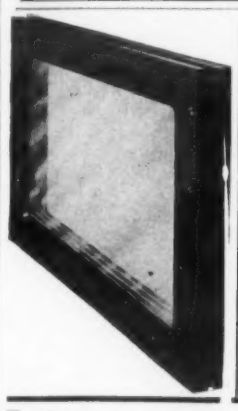
MISCELLANEOUS

A National Manufacturer of an Automatic Control for dispensing, and preserving Beverages and Beer, wants wholesale men, Distributors. Independent Service men for contract, all Territories, United States. Also wants Manufacturer who will manufacture high pressure controls. Reference and experience first letter. Box 575.

SAVE ON WHEELS!

Get our prices on any size, any quantity, any kind, of Blower Wheels. Made of best materials, designed by expert blower engineers. One-piece welded construction up to 15" diameter. Larger sizes solid riveted construction. WRITE FOR MONEY-SAVING PRICES!

KAY-EFF METAL SPECIALTIES CO.
N. W. Terminal Minneapolis, Minn.



ACE HARD RUBBER DOOR FRAMES
for Refrigerated Display Cabinets

- Molded in one piece. No joints or seams to catch dirt and grease. The use of a reinforcing, laminated, plywood core sealed by vulcanization entirely within the hard rubber prevents warping.
- *Complete catalogue and prices on request*

AMERICAN HARD RUBBER COMPANY
11 Mercer Street · New York, N. Y.
Akron, Ohio—111 West Washington Street, Chicago, Illinois

McCORD REFRIGERATION PRODUCTS

Commercial Evaporators
Domestic Evaporators
Condensers
McCord Ice Trays
Spiral Finned Tubing
Spiral Copper Finned Iron,
Steel or Copper Pipe

McCORD RADIATOR & MFG. CO.
DETROIT - - MICH.